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ORIGINAL ARTICLES.

ANALYSIS OF CASES OPERATED ON WITH THE AID OF THE MURPHY BUTTON UP TO THE PRESENT TIME.

BY JOHN B. MURPHY, A.M., M.D.,
OF CHICAGO;

PROFESSOR OF SURGERY AND CLINICAL SURGERY, COLLEGE OF PHYSICIANS
AND SURGEONS; PROFESSOR OF SURGERY, POST-GRADUATE MEDICAL
SCHOOL AND HOSPITAL; ATTENDING SURGEON COOK COUNTY
HOSPITAL; ATTENDING SURGEON ALEXIAN BROTHERS' HOS-
PITAL; CONSULTING SURGEON HOSPITAL FOR CRIPPLED
CHILDREN, ETC.

A SUFFICIENT time has now elapsed to warrant a complete report of the cases operated on by means of the Murphy anastomosis-button and to justify us in drawing conclusions as to the field of its usefulness. The advantages and disadvantages of the device were at first theoretic; they were later sustained or controverted by the results of experiments and in a small number of cases; finally we have now a very large number of cases from which to draw conclusions, and a sufficient number, I believe, to enable us to make valuable deductions for our guidance in the future. We shall consider the cases in groups and endeavor so to arrange them that the danger of the disease for which the operation was performed will be about equal in individual cases of the same group. We shall pay particular attention to the fatal cases and endeavor to determine the cause of the fatality: whether it was a result (*a*) of the disease itself; (*b*) of the general condition produced by the disease; (*c*) of the operation; (*d*) of failure to obtain a perfect result at the seat of approximation; (*e*) of the sequel of the operation; or (*f*) of intercurrent causes. With this general plan as a guide we take up the subject as follows:

GASTRO-ENTEROSTOMY FOR MALIGNANT DISEASE.

—By lateral approximation. Of this variety we have had twenty-seven cases with nine deaths. The first death was case No. 2. The patient had suffered from severe hemorrhage for four weeks preceding the operation, and it was hoped that by establishing a gastro-enterostomy a contraction of the stomach would take place, and possibly hemostasis. The operation was performed in seven minutes. The patient suffered little from shock, but the bleeding continued as before, and ended fatally four days later. The autopsy showed a perfect approximation. The second death was case No. 7. The patient died of exhaustion forty-eight hours after the oper-

ation. A perfect approximation was found on autopsy. The third death was case No. 9. The patient was very much emaciated and depressed before operation, and died twelve hours afterward. The autopsy showed a perfect approximation. The fourth death was case No. 15. The patient died of exhaustion in twelve hours. The fifth death was case No. 16. The smallest-sized button was used, as the operator had no other at the time. The button was so small that it was impossible for it to hold a sufficient amount of the tissue to retain the margin of a thick wall, as of the stomach, within its grasp. The wall slipped away from the clasp of the button, the gastric contents escaped into the peritoneal cavity and caused death. The smallest-sized button should never be used in any operation on the stomach. I do not consider it necessary to resort to the means suggested by Dr. Mynter and others, of placing a row of sutures outside of the button. If the proper-sized button be used and the running thread be properly inserted and tied, I consider the suturing unnecessary. The sixth death was case No. 17. The patient died of circumscribed peritonitis on the third day. On post-mortem examination the approximation was found to be perfect, and in the stomach was found a large ulcer three inches in diameter, which was probably the source of the infection. There was also carcinoma of the pancreas, the liver, and other organs, all of which contributed to lessen the resistance of the tissues against infection. The seventh death was case No. 21. The patient died of exhaustion four days after the operation. Perfect approximation was found, but no infection, and the button still in position. The eighth death was case No. 24. The patient died on the seventh day from a general suppurative peritonitis. Autopsy showed perfect approximation, and the button still in position; the cause of peritonitis was not given. The ninth death was case No. 26. The patient died of septic peritonitis. The button was not pressed tightly enough and an edge of the stomach had slipped away.

It will be noticed that four of the nine deaths resulted from exhaustion, two from imperfect operation, and three from peritonitis from infection at the time of operation. Are we justified in operating in these extremely emaciated, cachectic patients with carcinoma of the pylorus? What is gained by such an operation? The patients, as a rule, survive the operation but for a very short period of time, when

they succumb to the marasmus of the disease and not to the effects of obstruction of the pylorus. It is my opinion (and my practice is in accordance with it) that patients who are not in condition to withstand a pylorotomy should not be operated upon. The relief obtained, even when gastro-enterostomy is successful, is so temporary that it does not justify the danger and discomfort of the operation, notwithstanding that the operation can be performed with the button in from five to seven minutes. These patients suffer much more from shock in operation than those with non-malignant disease, and the regenerative power of tissues in a patient with malignant disease is much impaired, *i. e.*, it takes a much longer time to regenerate the tissues in these cases than it does in patients suffering from inflammatory lesions. Therefore, in this class of cases I scarify with the point of a needle the surfaces of the peritoneum of the stomach and intestinal wall where they are brought in contact; this hastens the primary adhesions and increases the rapidity of definitive union. A few interrupted sutures, one-half inch from the button, between the intestine and stomach, may be necessary when there is great traction of the coil of intestine approximated, but I have so far not found a case in which I considered it indicated. I prefer the position of von Hacker, though that of Wölfler may be used. I believe, with Dr. Willy Meyer, that the former favors the passage of the button into the intestine.

If the carcinoma involves but a small portion of the stomach in the neighborhood of the pylorus, the most satisfactory operation in its ultimate result is a division of the duodenum two inches below the pylorus, closing the proximal end with a Czerny-Lembert suture and joining the distal end to the posterior wall of the stomach with the button. In non-malignant strictures of the pylorus this is the only operation that should be performed. When the approximation has been made to the anterior wall of the stomach, the button has dropped back into the stomach in four cases; in none of them did it occasion any unpleasant symptoms, and I believe it would have passed as soon as the stomach contracted to its normal size and the patient was up and about for a considerable time. In the case reported by Zielewicz (*Centralblatt für Chirurgie*, No 37, 1894) the port-mortem report shows conclusively that the purse-string suture was outside of the clasp of the button. Furthermore, "an enormous meal of liver-sausage" six days after a gastro-enterostomy, as was given this patient, was not conducive to success, although it was not certain that it had anything to do with the death. I have not used the oblong button for this operation, and do not consider it necessary, as the results so far prove that the opening made by the circular button is ample, and that the scar does

not contract. It has, however, certain merits. It produces a larger opening; it is more easily inserted than the circular button, and passes through the intestine with greater freedom, as its diameter is only five-eighths of an inch. The only two cases in which it has been used are the following:

Case No. 29, reported by Dr. Joseph D. Bryant, New York. Diagnosis: fecal fistula of long standing. There had been several previous operations for its closure; it was believed to connect with the transverse colon. Operation was performed on May 9, 1894. Lateral approximation was made of the ileum to the descending colon with an oblong button (two-and-a-half inches in length); the button was easily inserted. Convalescence was uneventful. The button was passed on the fifteenth day. Dr. Bryant was the first to use the oblong button on the human subject. I am much pleased to know that the button passed at such an early day, as the oblong button causes a larger area of pressure-atrophy than the circular one.

Case 84, reported by Dr. Willy Meyer, of New York, was a male, aged twenty-two, who had a fistula in the right inguinal region. There was a history of appendicitis; the abscess was opened by a physician; a fecal fistula followed. Celiotomy was performed on May 31, 1894. Chronic appendicitis was found, and the appendix was imbedded in dense adhesions and perforated; resection of the appendix was performed; a loose tampon was inserted, and followed by the appearance of a fistula which baffled treatment. On August 16, 1894, ileo-colostomy was performed with the aid of Murphy's oblong button (two-and-a-half inches in length, five-eighths of an inch in width). The button worked like a charm. Its two halves could be tied in with great ease, and did not require a longer slit in the gut for insertion than the ordinary button. Recovery followed. The button was voided without any difficulty on the tenth day.

CONCLUSIONS.—1. Gastro-enterostomy should never be performed on an extremely cachectic patient.

2. The position of von Hacker is the preferable one.

3. A supporting suture outside of the button is not necessary except for the relief of tension.

4. In non-malignant stricture of the pylorus the end of the duodenum should be united to the posterior wall of the stomach.

5. Pylorotomy by the method to be described should always be resorted to when possible.

6. The patient should receive liquid nourishment immediately after the effects of the anesthetic have passed away.

PYLORECTOMY.—Pylorotomy is always the most desirable operation for malignant stricture of the pylorus, as it is the only one that offers hope of prolonging the life of the patient for a considerable time. When it is successful the patient regains

his usual vigor and temperament rapidly, and is in good physical condition until the disease recurs. The period of immunity frequently extends over many months, and occasionally years. By the use of the button the operation of pylorotomy is relieved of its greatest dangers—of shock, as the time consumed in operation is very much lessened, and also of leakage at the seat of approximation. The operation is best performed in the following manner: *First*, ligate the mesentery on the upper side of the stomach, pylorus, and duodenum, as a broad pedicle, with from three to five double ligatures, and cut between; *second*, ligate the mesentery on the under side in the same manner. The pylorus can then be lifted well up in the abdominal incision; *third*, pack thoroughly around with gauze and place two clamps on the stomach, one above and the other below the place to be incised; *fourth*, a circular incision is then made in the stomach, including the peritoneum and muscularis. This is pushed back half an inch and the mucous membrane cut off; the latter is rapidly closed with a continuous suture; the serosa and muscularis are then closed with a continuous Lembert suture. Two clamps are placed on the duodenum, and it is incised; *fifth*, one-half of the button is then placed in the end of the duodenum and the other half in the posterior wall of the stomach, one inch from the line of suture, and pressed together. We had four operations of this kind reported, with three recoveries. In all of the latter the button passed on through the duodenum.

The first case was that of Dr. A. H. Ferguson, operated upon July 25, 1893. The patient is still living and in excellent health, having gained sixty pounds in weight. The second case was that of Dr. Willy Meyer. The patient died several months after the operation. The third case (No. 85) died five days after operation. The patient was in an extremely emaciated condition, and, while the operation lasted only forty minutes, he was in a critical state all the time until he died. The fourth case (No. 78) was reported by Dr. M. H. Everett, Lincoln, Neb. The patient, a male, aged thirty-five, first complained of stomach-trouble eleven years ago. He has never been free from pain since. Five years ago he commenced to vomit, and during the five years he had not passed a day without vomiting. He is a very intelligent man, and gave a fair history of his trouble. He believes that nothing had passed down from his stomach for four or five months previously to operation. He came under my charge in November, 1894. His stomach was very much distended, and there was a tumor perceptible at the pylorus. Operation was undertaken on December 18, 1894; the incision was in the median line and four inches in length; the tumor was drawn out; there were no adhesions; the tumor was as large as a small turkey-egg; the mesentery was ligated and divided; the stomach was incised one inch from the growth, and a Czerny-Lembert suture used; the duodenum was

divided one inch from the growth; an incision in the posterior wall of the stomach was made, and the duodenum joined to it with the button. Certainly not five minutes were spent in making the anastomosis. The abdomen was closed without drainage; the temperature on the next day was 99° for a few hours, after which time it remained normal. The button was passed in two hours less than fourteen days after the operation. A wonderful change is noticeable in the man. He has not vomited, nor has he been nauseated. His appetite is enormous, and at this day, twenty-two days after operation, he has gained twenty pounds. The tumor was found to be a fibroma.

CHOLECYSTDUODENOSTOMY.—The results of the operation of cholecystduodenostomy with the aid of the anastomosis-button have been most satisfactory. There have been thirty-eight operations reported for cholelithiasis, with thirty-seven recoveries and one death. In Case 26, the patient lived for seven days following the operation. There was a continuous hemorrhage from the laceration of the liver from separated adhesions. A large quantity of blood was found in the peritoneal cavity on autopsy; perfect union existed between the bowel and the gall-bladder, and there was no peritonitis. These results were obtained by twenty-two different operators. In my first article on this subject I recommended the removal of only a sufficient number of gall-stones to allow of the insertion of the button. I early abandoned this method, as I saw that it was possible for calculi to remain in the diverticula of the gall-bladder after the button had passed. That this opinion was well grounded was shown in case No. 2, which was referred to me by Dr. J. H. Hoelscher:

Operation was performed on August 19, 1892. The patient made an excellent recovery. The button was not found, and the patient's condition continued good until December, 1894, when she was again attacked with colic in the region of the gall-bladder. This was not accompanied by jaundice; neither were her attacks before the first operation. A cholecystostomy was performed, and two large calculi were found in a pocket at the upper end of the cystic duct. The gall-bladder, from the fundus down to the calculi, a distance of two-and-one-half inches, had contracted to a tube about the diameter of a lead-pencil. The button was not there, having evidently passed unnoticed; the stones were crushed and removed; the patient made an excellent recovery.

This is the only case in which there was a recurrence of the symptoms after the operation, and supports the view advanced in my original article, that the gall-bladder would contract to a tube, and that the opening between the gall-bladder and the intestine would become so small by the contraction of the gall-bladder that it would not admit feces into the tract. We have no case of

infection of the liver or gall-tracts reported as a result of the operation. I believe, with Ruth, Willy Meyer, Ferguson, and others, and experience supports the position, that there is no danger from this source. A failure of union has not occurred in a single case. This is a most striking contrast in this particular to the results obtained with the suture. The theoretic objection expressed, that the button might drop into the gall-bladder and be retained there, has not been supported by a single case. The danger of hemorrhage in patients suffering from cholemia is very great; many of them have purpura hæmorrhagica before the operation. The greatest precaution should be exercised in lacerating adhesions in this class of cases, as the hemorrhage may continue for days and even weeks.

The operations of cholecystenterostomy for malignant disease were very unsatisfactory, as there were eight performed, with seven deaths. Two died of shock, and one from twisting of the small intestine before making the approximation, producing a volvulus. In one case the gall-bladder was so friable from malignant disease that it tore like wet paper when the sutures were inserted, and after the button was placed in position and the abdomen closed the friable wall gave way and peritonitis ensued. In all of the others the approximations were found perfect on autopsy. While the mortality from the operation is great, not one of the deaths could have been attributed to the method. Still they all tend to show that the operation for malignant disease is not a justifiable one, and in many of my recent exploratory operations, when I have found a large carcinoma of the pancreas, duct or neck of the gall-bladder, I have abandoned the operation, and all of the patients have survived the exploration.

Cholecystenterostomy is contraindicated in gangrene of the gall-bladder. These cases should be opened and drained externally, and the peritoneum thoroughly protected by packing. The indications for the operation of cholecystenterostomy are:

1. Obstruction of the common duct.
2. Obstruction of the cystic duct, when cholecystectomy is impracticable.
3. Chronic cholecystitis, with thickening of the wall of the gall-bladder.
4. Fistula of the gall-bladder when the patient is emaciated from the loss of bile.
5. Carcinoma of the head of the pancreas in the early stage.

INTESTINAL APPROXIMATION.—It is in this field that the button has been of the greatest practical value. The pathologic conditions demanding its use in this class of cases greatly endanger the life of the patient. The cases may be well classified as follows:

1. Resection of the bowel for gangrene. (a) For internal obstruction; (b) For hernia.

2. Resection of the bowel for cure of the fecal fistula.

3. Resection for malignant growths.

4. Resection for perforations of the intestine, both traumatic and pathologic.

5. Resection of the rectum.

Of the resections for gangrene of the bowel from internal obstruction we have fourteen cases and one death—case 64. The patient was a child that had suffered from a four-weeks' obstruction. She was so weak and emaciated when operated upon that she never rallied, and died in twenty-four hours. Of the resections for gangrenous hernia there were twelve, with two deaths. The first case, No. 4, died forty-eight hours after an operation for strangulated umbilical hernia which had perforated into the abdomen. A general septic peritonitis existed at the time of the operation. The autopsy showed continuation of the peritonitis, with perfect approximation, and the button in position.

The second case, No. 79, was a very interesting one, the patient having a congenital hydrocele of the testicle, with an inguinal hernia in a separate sac. The sac of the hydrocele connected with the sac of the hernia at its neck. The patient, after severe exertion, found his hernia down and painful. It was reduced in the usual manner, but the pain and vomiting continued. Six days after the obstruction occurred he was brought to me by Dr. Hanna, from Winfield, Iowa, who had seen him only a few hours before, and had made the diagnosis. I found the hernial sac free and empty, but a Littre hernia, involving four-fifths of the circumference of the bowel, was strangulated in the small opening of the hydrocele-sac. This knuckle had perforated into the sac, and the lining of the sac was gangrenous from the infection. A resection of five inches of intestine was made, together with an end-to-end approximation, the approximated intestine returned, and the abdomen dressed open. The patient's bowels moved six times within the next eight hours. He did not vomit, but his pulse increased in frequency, his facial expression became bad, and he died thirty hours after the operation, with all of the symptoms of auto-intoxication from the decomposing proteids that had been retained in the alimentary canal. There was no peritonitis. This case shows how important it is to act upon the symptoms of obstruction following an apparently complete reduction of a hernia.

Of resections for fecal fistula, with end-to-end approximation, there have been nine cases reported, all of which recovered. Here the results show that the operation of resection, with end-to-end approximation, promises much more for the patient than the lateral approximation, both for the immediate relief of the fistula and the permanent cure, and I now perform it in all cases in preference to the lateral. The relative value of the two operations is illustrated

in case No. 45 in this report, and case No. 10 in the *Chicago Clinical Review* for June, 1894:

The patient had suffered for a period of two years from a fecal fistula, following a celiotomy for adherent ovarian cyst. It resisted all efforts at closure. An incision was made in the abdomen, and the two ends of the intestine which led to the fistula were approximated laterally with the button. The patient recovered nicely from the operation, but the fistula remained open. A plastic operation was done for the closure of the fistula, but it failed. The patient was continually emaciating, as the fistula was high up in the bowel. Nine months after the lateral approximation a second operation was performed. The fistulous tract was dissected out down to the peritoneum and ligated. A median incision was then made, and the adhesions of the intestine around the fistulous opening were separated, and the fistula and adherent intestinal coil drawn out of the abdomen. It was then found that two loops of the intestine were leaking at the seat of the fistula, and that only one loop had been relieved by the lateral approximation performed nine months previously. A resection of twenty-five inches of the intestine was practised, including both fistulae, the entire adherent loop and the seat of the lateral approximation, and the bowel joined end-to-end with button No. 3. The patient made a rapid recovery. Four weeks after the approximation the button was found resting in the rectum. The opening made by the button used in the lateral approximation measured five inches at the time the specimen was removed, while the circumference of the button was only three-and-a-half inches, showing that the opening did not contract, but had expanded. (Expansion of the opening was also noticed in a case operated on by Dr. T. A. Davis, in which the specimen was removed several months after the operation.) The patient has increased in weight, and is now performing the duties of a domestic.

We have a total of forty-one resections for non-malignant disease, with two deaths. If to these be added the seven cases of Dr. Joseph Price, the details of which I have not received, with six recoveries, we have a total of forty-eight cases, with three deaths. The first death (case 4) resulted from continued peritonitis, the second death (case 79) from auto-intoxication. In Dr. Price's case the death occurred twelve hours after the operation, from shock. The operation consisted in the removal of an enormous universally-adherent fibroid, and the excision of several inches of bowel and a portion of one ureter. These results, obtained in the hands of many operators, certainly indicate that the question of operation in gangrenous hernia, internal obstruction, and fecal fistula, is definitely settled, *i. e.*, that resection with end-to-end approximation yields all that could be expected in the way of results.

Resection of the intestine, with end-to-end approximation, does not furnish as good results for malignant disease as for non-malignant, as is the case

with all operations for malignant disease. Still, when we review and analyze these results they show a great improvement over those obtained by other methods, and are, on the whole, very satisfactory. There were thirty operations, with seven deaths. These include eight resections of the cecum, with one death. The cause of death in the malignant cases was as follows: In case No. 30, infection from without during the operation. A perfect approximation was found on autopsy. Case No. 35, from shock; death occurred ten hours after the operation. Case No. 56, from peritonitis. The specimen showed that there was no evidence of attempt at union at the seat of approximation, and that the peritonitis was present from the time of operation. Case No. 71 died of peritonitis. A specially large-sized button, one-and-a-half inches in diameter, was used. It fitted the intestines too snugly and produced a sloughing over the surface of the button, with perforation. In operations, as well as in experiments on the dog, this important factor should not be overlooked, that the button should fit easily in the intestine. Case No. 74 died of fatal peritonitis. The operator, in explaining the cause of the gangrene of both ends of the bowel, attributed it to the length of time that the ends were compressed during the operation, and this conclusion is certainly supported by the fact that both ends were gangrenous, that the perforation occurred, not at the seat of the pressure-atrophy, but beyond the margin of the button. If the gangrene had resulted from the button itself, it would have involved but one end of the intestine, and would have taken place at the position of pressure-atrophy, *i. e.*, at the junction of the button. The intestinal clamps that I use on the intestine, to prevent the escape of feces and gas, cannot produce this condition, as they do not compress the parallel artery of the bowel, which is surrounded by a cushion of fat in the triangle made up by the division of the peritoneal surfaces of the mesentery and the wall of the bowel. This artery is the most important one for the nutrition of the bowel, as is shown by my experiments on the intestine. In case No. 81 death occurred shortly after operation, but the cause was not reported. Finally in case No. 90 death resulted from exhaustion five days after operation. (See report.)

RESECTION FOR PERFORATIONS OF INTESTINE, TRAUMATIC AND PATHOLOGIC, WITH END-TO-END APPROXIMATION.—The mortality from perforations, both from gunshot wounds and for perforating ulcers, has always been very great, not that the danger resides in the operation for repair, but in the pathologic conditions themselves. Leübe, in his collection of 322 cases, found that when the operation was performed within twelve hours after pathologic perforation the mortality was 58.2

per cent.; if later than twelve hours, 79.5 per cent. In bullet-wounds of the abdomen the collapsed condition of the patient, the profuse hemorrhage, and the shock of the nervous system, all contribute very greatly to the mortality. The treatment of these cases, the practice of evisceration, now in vogue, to determine the number of perforations, and to be certain that none remain open, I consider excessive surgical precaution. We can estimate with great accuracy the position of the wound in the bowel by calculating the course of the bullet from the point of entrance to the position in which it is lodged. We are assisted very much in locating the bullet by the ingenious telephonic bullet probe of Dr. J. H. Girdner, of New York. The rule in bullet-wounds is that there are two perforations of the small intestine and none other, or two or more of the small and none of the large, or thirdly, the most common condition, there are a large number of perforations of the small intestine in close proximity, and, exceptionally, an additional perforation of the large intestine. This relation is accounted for, first, by the more or less irregularly transverse arrangement of the coils of the intestines, and, second, that a bullet rarely passes in the direction from head to foot, or the reverse. It more commonly passes either, first, from before backward, in which case we have one or two perforations; or, second, transversely, and we then have many perforations in close proximity, from three to fifteen in number, and situated very closely, *i. e.*, we may have as many as ten or twelve perforations within twenty inches of intestine. It is not necessary to eviscerate in order to locate them. They are in close proximity, and can be easily recognized. The operation should consist in resection of the entire perforated coil, an end-to-end approximation, with drainage of the cavity. When the perforations are a greater distance apart, double resections may be made and two buttons inserted, as in case No. 66, reported by Dr. R. R. Williams, of Manning, Iowa:

The patient was a male, sixteen years old. On August 7, 1894, he was injured by the bursting of a fly-wheel, rupturing the abdominal wall from the symphysis pubis to the umbilicus, the bowels protruding. Operation was performed six hours after the accident. On opening the abdominal wall it was found that a two-inch opening in the bladder existed, and the intestine was completely severed in two different places. The bladder was sutured. The bowel was united end-to-end with two Murphy buttons. The patient's convalescence was good except for extensive urinary infiltration. The buttons were both passed on the eighteenth day. The infiltration and necrosis continued, and the patient finally succumbed to the sepsis. This is the first successful case of double intestinal anastomosis with the buttons at one sitting.

Case 83.—For details of this very interesting case by Dr. F. H. Wiggin, see the *New York Medical Journal* of December 1, 1894. The operations for pathologic perforation of the intestinal tract are, as a rule, deferred too long. The profession has not yet extricated itself from the erroneous belief that the symptoms of collapse occur immediately after the perforation takes place. I would enunciate the following rule, and it should be impressed on the mind of every physician: *the manifestations of perforation into the peritoneal cavity depend upon the character and quantity of material admitted into the cavity and the pathologic changes produced thereby in the peritoneum.* By this I mean that the symptoms are not the result of the perforation *per se*, but the result of the pathologic changes produced by the result of perforation. To illustrate this law: In one case we will have a perforation of the intestine that will give rise to but slight symptoms of pain, nausea, discomfort, and local tenderness, but little elevation of temperature. This is the common train of symptoms produced primarily by a typhoid ulcer, and the symptoms may continue mild for a number of hours or days, even to a short time before dissolution, when symptoms of collapse occur. On the other hand, when we have a perforation of the stomach or the perforation of a peri-appendiceal abscess, the rupture of a pus-tube, etc., intense pain, great tenderness, nausea, vomiting, gulping, an anxious expression, a rapid thready pulse, and cold perspiration, take place more rapidly; but it should be distinctly understood that these are symptoms of pathologic changes in the peritoneum, and may not occur until a long period of time after the perforation has taken place, and are due to (a) extensive peripheral-nerve irritation, (b) toxemia, and (c) bacterial infection.

LATERAL APPROXIMATION.—There have been four operations of lateral approximation for malignant growths, with two deaths, and six for non-malignant disease; all of the cases recovered.

RESECTION OF THE RECTUM.—This operation has been relieved of its most trying mechanical part, *i. e.*, the difficulty of drawing down and approximating the upper to the lower segment, suturing it there and still retaining the sphincter intact. There have been reported three resections, with recoveries, and two lateral approximations, that is, approximations around the strictures with a pressure-atrophy of the stricture, a method in which the button is used, devised and described by Dr. Bacon in the *New York Medical Record*, December 10, 1892. The operation of resection, with removal of the sacrum (Kraske) and end to-end approximation with the button, was first done by Dr. Henry O. Marcy, of Boston, October 16, 1893. (Case 13, *Medical Record*, June 26, 1894.) The method of procedure for resection of the rectum is as follows: 1. In order to perform

the operation without removing the coccyx or sacrum (Kraske), it is necessary to be able to reach the upper margin of the carcinoma with the index-finger. 2. The sphincter should be dilated until it is completely paralyzed; the carcinoma should be drawn down with forceps, and the rectum packed with gauze above. 3. A puckering-string should be inserted in and out through the wall of the rectum, one-half inch below the carcinoma, and left perfectly loose, so that the bowel may retain its entire caliber. 4. A circular incision is now made through the entire wall of the rectum, one-quarter of an inch above the suture and between it and the carcinoma. 5. The carcinoma and rectum are then liberated from the surrounding connective tissue, and the latter is drawn down as a cylinder into the lower segment of the rectum, and the separation continued until we are well up above the carcinoma. If the patient be a female, we shall find the cul-de-sac firmly adherent to the rectum, usually at the seat of the carcinoma. It should be cut open, the portion adherent allowed to remain, and immediately sewed with a fine catgut suture. The separation can extend up as far as necessary. One-half inch above the carcinoma another puckering-string is inserted, and a circular incision is made a quarter of an inch below this, cutting out the carcinoma. The gauze-packing is then removed. 6. The male portion of the button in which is threaded extremely heavy braided silk, double-drawn through the cylinder, is placed above, and the upper puckering-string tied around the cylinder of the button and cut short. The stem is held with a small forceps. (Do not use a heavy forceps to hold the button, as it presses the cylinder out of shape, thus preventing the button from closing.) 7. Slide the female portion of the button over the string, and press it up until it barely catches the end of the male cylinder, just sufficiently to hold. 8. Make a small parallel incision in the lower segment of the rectum over the coccyx and one-half inch below the first puckering-string inserted. Through this, pass a strand of iodoform-gauze for drainage outside of the button. (This may be removed on the third or fourth day, if necessary.) 9. Draw the button well down and tie the first puckering-string around the conjoined cylinders; cut the suture short and press the button together by making traction on the cord and pressing up from below. 10. Have the bowels loose before the operation, and keep them loose afterward, until the button frees itself, or can be liberated by slight traction about the tenth day. Use heavy silk both for the puckering-string and for traction-cords, as it is very unpleasant to have either break. Do not press the button too closely together before tying the second puckering-string. The

traction-cords may be left in place until the button is removed.

CONCLUSIONS.—1. The cicatrix caused by the use of the button does not contract.

2. Size No. 1, $\frac{3}{4}$ inch, or 0.02 m., or No. 2, $\frac{1}{2}$ inch, or 0.022 m., should be used for cholecystenterostomy. I prefer No. 2.

3. End-to-end, side-to-side, and end-to-side approximation of the small intestine should be made with button No. 3, $\frac{1}{8}$ of an inch, or 0.025 m., in diameter.

4. End-to-end and side-to-side approximation of the large intestine should be made with button No. 4, 1 inch, or 0.026 m., in diameter.

5. A specially large size, $1\frac{1}{4}$ inch, or 0.029 m., in diameter, with a long male cylinder, may be used in some cases of resection of the rectum with advantage. But it should not be used unless it fits loosely.

6. In intestinal obstruction, resection, with end-to-end union, gives better results than lateral approximation, and should always be performed when practicable. The same operation should always be done in gangrenous hernia. In fecal fistula the bowel should be resected and united end-to-end.

7. The patients should receive liquid nourishment as soon as the effect of the anesthetic passes off. The bowels should be made to move as soon as possible after the operation, and frequent evacuations should be kept up.

8. If the button does not pass in three or four weeks, the rectum should be examined, as the button may rest just inside the sphincter.

9. There has been one case reported of occlusion of the button by fecal impaction in the cylinder. This can be easily avoided by a mild cathartic immediately after the operation.

10. When returning the intestines to the abdomen they should be placed in parallel lines, especially at the seat of approximation, to prevent sharp curves and obstruction. This occurred once with the button; many are reported following suture.

11. There is no danger of obstruction from the button, as not a single case has been reported. This proves that the deductions made by Choput, of Paris, from experiments on the cadaver are erroneous.

12. There is no danger of extension of the pressure-atrophy beyond the line of pressure.

13. Primary adhesion may be hastened in malignant cases by abrading the peritoneum with a needle. It is unnecessary in non-malignant cases.

14. A supporting suture is never necessary to secure union, and should only be used to relieve tension when the viscera approximated are forced out of position.

66	Aug. 7	Not published.	Williams, R. R., Manning, Is.	Double rupture of intestine, traumatic.	Resection (double).	E. E. double	R.	.....	Both buttons voided in 18 days. Bowels moved daily from time of operation. Patient died of extensive laceration of bladder from which he died later.
67	July 11	"	Abbe, Robert, New York.	Ileo-colic anastomosis.	Resection of caput coli.	E. E.	D.	.....	Button, not withstanding an ileostomy by hardened feces in the intestine, did not prevent the patient from passing stool. Patient in such extreme condition that resection was not deemed expedient. The bowels might be replaced. Anastomosis made in ten minutes. Patient never rallied from shock.
68	June 9	October, 1894.	Summers, J. E., Omaha.	Intes. obs. (5 days) by malig. growth of sigmoid.	Anastomosis around tumor.	L.	D.	Shock, 25 hours after opera- tion.	Tuberculosis involved four inches of sigmoid; perfect recovery.
69	June 13	Omaha Clinic, October, 1894.	Summers, J. E., Omaha.	Tuberculosis of tube in- volving sigmoid.	Removal of tube, resection of 5 inches of sigmoid.	E. E.	R.	.....	" Button should be considered a great advancement in technique; much better than any other method. Resection of adherent intestine, and colon, and sigmoid, was performed. A button was inserted on 1 1/2 inch in diameter used; fitted inter- time snugly; sloughing of bowel over button due to tension and pressure of metal on account of large size and weight; but- ton from former anastomosis in some cases found resting in loop close to growth; caused no inconvenience (April 27, 1894).
70	.....	Med. Week, Paris, Nov. 9, 1894.	Hartmann, Paris.	Ileo-cecal inflam. adhesions.	Resection of cecum.	E. E.	R.	.....	A sac full of feces, bowel ruptured, resection to sound tissue; drained; four bowel-movements in six hours; perfect recovery.
71	June 1	Not published.	Abbe, Robert, New York.	Carcinoma of descending colon.	Resection of growth and loop of intestines.	E. E.	R.	.....	Bowel ulcerated, perforated large intraperitoneal pocket; another perforation over down; this was sutured. Abdomen closed. The patient died.
72	Nov. 24	"	Murphy, J. B.	Gangrenous femoral hernia, 4 days.	Resection, 8 inches ileum.	E. E.	R.	.....	First button found free in splenic flexure above the obstruction caused no trouble. Sigmoid tumor resected; time two hours; elastic tube used to prevent escape of feces; operation difficult.
73	July 19	"	Bell, James, Montreal.	Intestinal obstruction, per- foration, adhesions.	Resection, 4 inches small intestine.	E. E.	R.	.....	Death four days later. Ends of bowels both gangrenous in whole circumference; perforation had taken place just beyond the bor- der of the button; fatal peritonitis.
74	Sept. 11	"	Bell, James, Montreal.	Intestinal obstruction, tumor involving bowel.	Resection, 3 in. sigmoid with tumor (carcinoma).	E. E.	D.	.....	Sac contained effusion bloody serum. Mesentery peeled back from tumor, a radical cure made. Perfect recovery.
75	Oct. 18	"	Bell, James, Montreal.	Femoral hernia, gangrene.	Resection, 11 in. ileum.	E. E.	R.	.....	Abdomen closed and radical cure made. Perfect recovery.
76	Nov. 1	"	Murphy, James, Sunderland, Eng.	Ileus.	Resection, 6 in. small intes- tine.	E. E.	R.	.....	The intestine was bound down by a band of fibrous tissue obliter- ating 6 inches; resection; button passed on 21st day; perfect re- covery.
77	Oct. 15	Med. Week, Dec. 7, 1894.	Ullmann, Vienna.	Carcinoma of cecum.	Resection, 26 inches.	E. E.	R.	.....	Patient made an excellent recovery, and was exhibited before Medical Society six weeks after operation.
78	Dec. 18	Not published.	Everett, M. H., Lincoln, Neb.	Tumor of pylorus.	Resection, 4 in. stomach, 2 1/4 inches duodenum.	E. S.	R.	.....	Button passed 13 days after operation; patient's temperature never rose above 100° F. Abdomen united to posterior wall of stomach.
79	Dec. 30	"	Murphy, J. B.	Strangulated inguinal hernia, 6 days.	Resection, 5 in. small intes- tine.	E. E.	D.	30 hours' aspe- mia.	Uneventful recovery.
80	Nov. 7	"	Griffith, J. D., Kansas City.	Rupture of intestine, septic peritonitis.	Resection, — inches.	E. E.	D.	12 hours' shock, sepsis.	Bowel gangrenous, perforated, congenital hydrocele sac full of pus, large quantity of serum in peritoneal cavity; bowels moved six times in first 24 hours; pulse increased continuously in fre- quency; delirium, no vomiting; death from sepsis.
81	Dec. 16	"	Griffith, J. D., Kansas City.	Stenosis, ileo-cecal.	Ileo-colostomy.	S. S.	R.	.....	Gas and feces passed off freely through the bowel.
82	Mar. 20	"	Griffith, J. D., Kansas City.	Gunshot wound of large in- testine.	Resection.	E. E.	D.	Shock, 2 hours.	Button passed 21st day.
83	July 7	"	Wiggins, F. H., Kansas City.	Double perforation, trau- matic.	Double anastomosis.	E. E.	R.	.....	Death 60 hours after operation from obstruction by adhesions of intestines in a sharp angle at seat of operation, producing ob- struction. Line of union in both places barely visible; pressure- atrophy almost complete at seat of adhesions, where adherent bowels protected line of union.
84	Aug. 16	"	Meyer, Willy.	Fecal fistula.	Ileo-colostomy.	S. S.	R.	.....	Oblong button used in this case, which passed on the 10th day without pain or difficulty.
85	Sept. 30	.....	Wittwer, H. R.	Carcinoma of pylorus.	Pylorostomy.	E. S.	D.	Exhaustion 5th day.	Time occupied in operation 40 minutes. Autopsy: peritonium dry, no adhesions from union of end of duodenum to wall of wall of stomach. Button still in position; stomach very much contracted and full of cherry-pits, lima-beans, and grape-seeds; many of them had passed through button.
86	Oct. 24	Centbl. für Chir., No. 39, 1894.	Plettner, A., Dresden.	Carcinoma of cecum.	Resection of cecum.	E. E.	R.	.....	Button passed on 14th day without being noticed by patient; dis- charged on 21st day.
87	Oct.	Not published.	Reeve, J. C., Dayton, W.	Fecal fistula (hernia).	Lateral ap.	S. S.	R.	.....	Button voided on 15th day: uneventful convalescence; rapid im- provement in condition.
88	Sept. 20	"	Corbin, A. I., Englewood.	Pyloroplex, tubes adherent.	Resection trans. colon 8 in.	E. E.	R.	.....	Button voided on 8th day; uneventful recovery.
89	July 1	"	Davis, T. A., Chicago.	Fecal fistula from hernia.	Resection, 4 inches.	E. E.	R.	.....	Button voided on 20th day; uneventful recovery.
90	Nov. 9	"	Lee, E. H., Chicago.	Gunshot wound of abdomen.	Resection, double.	E. E.	D.	Shock and hem- orrhage.	Two large perforations of large mesenteric arteries, very profuse hemorrhage; 12 perforations of bowel; two resections of about 12 inches; time of operation 47 minutes. Patient exsanguinated. Autopsy: no peritonitis, perfect approximations. Death 36 hours after operation.

CHOLECYSTODUODENOSTOMY FOR CHOLELITHIASIS. (METHOD: MURPHY BUTTON.)

No.	Date.	Publication.	Operator.	Diagnosis.	Operation.	Position.	Result.	Cause of death.	REMARKS.
23	1893 Oct. 16	Not published.	Ferguson, A. H.	Gall-stones.	Cholecystoduodenostomy.	S. S.	R.	.....	Excellent recovery.
24	1894 Feb. 6	Medical Record, N. Y.	Moffatt, H.	Cholelithiasis after cholecys- tomy.	Cholecystoduodenostomy.	S. S.	R.	.....	Patient had previous cholecystostomy, November, 1893. 14 calculi removed; symptoms returned and cholecystenterostomy done.
25	Feb. 22	Not published.	Ferguson, A. H.	Gall-stones.	Cholecystoduodenostomy.	S. S.	R.	.....	Excellent recovery.
26	March	"	Bradley, Peoria, Ill.	Obstruction common duct.	Cholecystoduodenostomy.	S. S.	D.	Exhaustion 7th day.	Post-mortem: Profuse hemorrhage from liver where it had been torn during operation in freeing adhesions. Approximation perfect. Time of operation 40 minutes.
27	Mar. 23	"	Ferguson, A. H.	Gall-stones.	Cholecystoduodenostomy.	S. S.	R.	.....	Excellent recovery.
28	April 17	Bull. Med. and Surg. Journ., July, 1894.	Mynter.	Cholelithiasis, enlarged gall- bladder.	Cholecystoduodenostomy.	S. S.	R.	.....	Rapid recovery. Button passed 22d day; 156 gall-stones.
29	May	Not published.	Bradley, Peoria, Ill.	Cholelithiasis, dilatation of gall-bladder.	Cholecystoduodenostomy.	S. S.	R.	.....	150 calculi. Button passed 40 days after operation.
30	May 16	"	Parkhill, Clayton	Gall-stones.	Cholecystoduodenostomy.	S. S.	R.	.....	Button passed 22d day. Convalescence uneventful.
31	July 26	"	Burdick, G. G.	Cholelithiasis—obstructive.	Cholecystoduodenostomy.	S. S.	R.	.....	Button passed 14th day. Large calculus allowed to remain in cholelithiasis.
32	Aug. 17	"	Middleton, W. D. Davenport.	Cholelithiasis—obstruction of choledochus.	Cholecystoduodenostomy.	S. S.	R.	.....	Gall-bladder found contracted to size of hickory-nut; stone half size that removed; obstruction due to stone degenerating along length of duct. Smallest-sized button used; rapid convalescence.
33	Sept. 8	"	Murphy, J. B.	Cholelithiasis—obstruction of cystic duct.	Cholecystoduodenostomy.	S. S.	R.	.....	Time of operation 20 minutes. Difficulty experienced in pressing large calculus from cystic duct back into gall-bladder; 60 calculi removed.
34	Sept. 15	"	Murphy, J. B.	Cholelithiasis—obstruction of cystic duct.	Cholecystoduodenostomy.	S. S.	R.	.....	Gall-stones as large as filbert impacted in cystic duct removed through gall-bladder, which was full of mucus; no bile; patient never had jaundice or colic. Time of removing calculus and making anastomosis, 5 minutes; time of entire operation, 16 minutes.
35	Sept. 15	Pittsburg Med. Rev., p. 253.	Werder, X. O., Pittsburg.	Cholelithiasis.	Cholecystojejunostomy; closure of fistula.	S. S.	R.	.....	Button passed 27th day.
36	Nov.	Not published.	Murphy, J. B.	Cholelithiasis—cholecystitis.	Cholecystojejunostomy.	S. S.	R.	.....	A pure cholesterin calculus $\frac{3}{8}$ inch in diameter removed. Button passed 18th day, after severe vomiting. The largest-sized button was used, as the small one had a spring broken from being carried in the pocket.
37	.....	"	Johnson, Geo. B. Long, J. W., Richmond.	Cholelithiasis—occlusion of common duct.	Cholecystoduodenostomy.	S. S.	R.	.....	Gall-bladder firmly adhered to colon; Pequelein cautery used for separating adhesions removed; button passed 19th day with two stones.
38	Nov. 11	"	Morris, E. V. D. Galesburg.	Cholelithiasis—enlarged gall- bladder.	Cholecystenterostomy.	S. S.	R.	.....	Uninterrupted recovery. Eight ounces of bile in gall-bladder, time 30 minutes; discharged from hospital in 16 days; button voided 11 days.

CHOLECYSTENTEROSTOMIES IN MALIGNANT CASES. (METHOD: MURPHY BUTTON.)

No.	Date.	Publication.	Operator.	Diagnosis.	Operation.	Position.	Result.	Cause of death.	REMARKS.
3	1894 Feb. 2	Not published.	King, Ernest W.	Carcinoma of pancreas.	Cholecystoduodenostomy.	S. S.	D.	Death on 4th day.	No peritonitis; cholemic hemorrhage from all mucous surfaces of the body.
4	March	Bull. Med. and Surg. Journ., July, 1894.	Mynter, N. Y.	Stenosis of common duct.	Cholecystoduodenostomy.	S. S.	D.	Prostration.	No peritonitis; perfect adhesions; multiple carcinoma of pancreas and liver.
5	Sept. 24	Not published.	Hendricks, N. Y. New York.	Malignant obstruction of duct.	Cholecystocolostomy.	S. S.	R.	.....	Button passed.
6	1893 Jan.	"	Dawbarn, R. H. M. New York.	Cholelithiasis.	Cholecystoduodenostomy.	S. S.	D.	Peritonitis.	It was found on introducing the suture that a carcinoma of the gall-bladder as well as gall-stone existed. When the suture were introduced they tore through the carcinomatous wall as if it were wet paper; the smallest-sized button was finally placed and the intestine approximated; death from septic peritonitis; autopsy showed the friable gall-bladder gave way from the clasp of the button. As far as I can learn this was the first time the

button was used in New York. Dr. Dawbarn comments: "This case should not count against the method for the reasons mentioned. I have repeatedly demonstrated upon the cadaver that the button can be placed in the stomach without any difficulty. Patient had large hemorrhagic spots all over body at time of operation. Autopsy showed large extravasations throughout entire intestinal tract; no peritonitis. Operation greatly prolonged on account of adhesions; connection to jejunum.

GANGRENE OF THE GALL-BLADDER. (METHOD: MURPHY BUTTON.)

No.	Date.	Publication.	Operator.	Diagnosis.	Operation.	Position	Re- sult.	Cause of death.	REMARKS.
7	1893 Feb. 27	Not published.	Griffith, J. D., Kansas City.	Cholelithiasis, cholemia.	Cholecystenterostomy.	S. S.	D.	Exhaustion.	
8	Mar. 13	"	Griffith, J. D., Kansas City.	Cholelithiasis, impaction in duct.	Cholecystenterostomy.	S. S.	D.	Shock.	

GASTROENTEROSTOMY. (METHOD: MURPHY BUTTON.)

No.	Date.	Publication.	Operator.	Diagnosis.	Operation.	Position	Re- sult.	Cause of death.	REMARKS.
10	1893 July 21	Not published.	Middleton, W. D. Dayton, O.	Stricture of pylorus.	Gastroenterostomy.	L.	R.	.....	Uneventful recovery. Patient up to date has gained 45 lbs.
11	"	"	Reynolds, A. L. Cincinnati.	Carcinoma of pylorus.	Gastroenterostomy.	L.	R.	.....	Button passed 19th day. Patient died four months later.
12	April 19	"	Bresler, Baltimore.	Obstruction of pylorus.	Gastroenterostomy.	L.	R.	.....	Death four weeks later. Exhaustion. Button found at splenic flexure of colon; retained by band of adhesion; no obstruction.
13	April 30	Buf. Med. and Surg. Journ., July, 1894.	Mynter, H.	Carcinoma of pylorus.	Gastroenterostomy.	L.	R.	.....	Vomiting ceased. Patient left hospital in three weeks.
14	May 5	Buf. Med. and Surg. Journ., July, 1894.	Quenu.	Epithelioma of stomach.	Gastrojejunostomy.	L.	R.	.....	Time of operation 1 hour 55 minutes. Uneventful recovery. Up in 18 days. Great increase in weight. Not possibly grasp tissue.
15	May	Buf. Med. and Surg. Journ., July, 1894.	Mynter, H.	Carcinoma of pylorus.	Gastroenterostomy.	L.	D.	Exhaustion, 12 hours.	Small-sized button used for the stomach. The wall of stomach slipped out of its embrace and allowed contents to escape. A running suture is not necessary if proper-sized button is used.
16	.....	Buf. Med. and Surg. Journ., July, 1894.	Mynter, H.	Carcinoma of pylorus.	Gastroenterostomy.	L.	D.	.....	Exhaustion. Largest button used. Patient very weak and emaciated previous to operation from constant vomiting. Post-mortem revealed circumscribed peritonitis about the site of operation.
17	July	Not published.	Middleton, W. D.	Carcinoma of pylorus.	Gastroenterostomy.	L.	D.	Death 3d day.	Approximation perfect. Stomach eroded by a great ulcer 8 inches in diameter. Pancreas and other organs involved. Rapid recovery. Discharged August 15, 1894.
18	July 6	"	Meyer, Willy.	Malignant stricture of py- lorus.	Gastroenterostomy.	L.	R.	.....	Death 14 days afterward; broncho-pneumonia. Autopsy: perfect union; button liberated; opening twice as large as button.
19	July 4	"	Mayo, W. J., Rochester.	Carcinoma of pylorus.	Gastroenterostomy.	L.	R.	.....	Patient still in hospital doing well, September 6, 1894.
20	July 23	"	Meyer, Willy.	Carcinoma of pylorus.	Gastroenterostomy.	L.	R.	.....
21	Sept. 13	"	Lyman, C. B., Denver.	Carcinoma of pylorus.	Gastroenterostomy.	L.	D.	Exhaustion 4th day.	Autopsy: very large carcinoma involving large portion of stomach and duodenum. No peritonitis; perfect approximation; button in position.
22	Sept. 30	"	Bryant, E. A., Los Angeles.	Carcinoma of pylorus.	Gastroenterostomy.	L.	R.	.....	Button No. 3 (1 inch in diameter) used, which was voided on 16th day. No pain, fever, or vomiting after operation.
23	Sept. 26	Med. Week., Paris, Oct. 13, 1894.	Jaboulay.	Carcinoma of pylorus.	Gastroenterostomy.	L.	R.	.....	Button No. 3 used, which passed on 14th day. Patient made an excellent recovery.
24	Aug. 23	Cal. Med. Journ., Nov. 18, 1894.	Case, C. E., Tacoma.	Carcinoma of pylorus.	Gastrojejunostomy.	L.	D.	Peritonitis, 7 days.	Autopsy: perfect union at seat of approximation; button still in position; general suppurative peritonitis.
25	1893 Oct. 12	Not published.	Griffith, J. D., Kansas City.	Carcinoma of pylorus and duodenum.	Gastrojejunostomy.	L.	R.	.....	Died two weeks later of exhaustion. Patient 72 years old, and very much emaciated.
26	Nov. 10	"	Griffith, J. D., Kansas City.	Carcinoma of duodenum and pylorus.	Gastrojejunostomy.	L.	D.	Septic perito- nitis.	Button not pressed tightly enough, one edge loose; patient 60 Button voided on 12th day. Doyen's procedure approximating intestine to posterior wall of stomach through perforation in transverse mesocolon.
27	1894 Jan. 4, 1895.	Paris Week. Jan. 4, 1895.	Manod, Paris.	Carcinoma of pylorus.	Gastroenterostomy.	L.	R.	.....

15. The mucous membrane should be pushed down in the cup of the button before closing it; if redundant, it should be trimmed off with the scissors. *It should never be allowed to protrude between the edges of the button when the button is closed.*

16. While the button is easily inserted, the pathologic condition requiring the operation may demand the greatest surgical skill to secure a favorable result.

17. The following points regarding the construction of the button should be noted before using it:

(a) The spring catches should hold firmly in all positions and should be made of a metal that will not be corroded by acids.

(b) The elastic-pressure cup should be on the male half of the button (never on the female).

(c) The edges of the pressure-surfaces should be very smooth and hemispherical in shape.

(d) The spring under the pressure-cup should not be too strong.

(e) There have been defective buttons on the market. The following firms are at present manufacturing perfect buttons: J. J. Ryan & Co., Chicago; Truax, Greene & Co., Chicago; Geo. Tiemann & Co., New York; W. F. Ford & Co., New York; Down Brothers, London, England; Sharp & Smith & Co., Chicago; Frantz, Kratzmüller & Co., Chicago and Berlin.

18. If the button appears at the opening of the fistula after lateral approximation, do not try to force it through the opening; this is unsurgical. Open the abdomen, and (a) press it back to the anastomotic opening and through it on down the intestine, and it will pass; or (b) make a longitudinal incision in the bowel and take it out.

PHYSIO-MEDICALISM.

BY J. BEN NICHOLS, M.D.,
U. S. SOLDIERS' HOME, WASHINGTON, D. C.

PHYSIO-MEDICALISM, also called sanative medicine, is a descendant of Thomsonian or botanic medicine, and arose in Ohio about 1845, having continued to the present time as a weak and rather obscure medical sect, the only surviving form of Thomsonism in America.

Alva Curtis, who formulated and developed physio-medicalism from the Thomsonian system, was born in New Hampshire in 1797. He obtained a good general education (receiving late in life the degree of A.M.), and studied medicine for a time under a preceptor. Up to 1832 his main occupation was teaching; but after the cholera-epidemic of that year he engaged exclusively in practising and disseminating the Thomsonian medical system. About 1837 he became editor of a Thomsonian

journal, and gave instruction in the system at Columbus, Ohio. In 1839, under a State charter, he established the Botanico-medical College of Ohio, which in 1841 was transferred to Cincinnati. He continued editor of the journal until 1855, and taught in the college until 1875. During that time he wrote numerous works in presentation and support of physio-medicalism, some in a style of tedious pseudo-philosophic analysis, some of a controversial character. He died in Cincinnati in 1881.

The Physio-medical College of Cincinnati, founded by Curtis, in 1839, as the Botanico-medical College, and under his management for many years, was the leading influence in the promulgation and maintenance of the system. The name physio-medical, which was introduced by Curtis about 1842, was applied to it from about 1849. The institution continued in existence until 1880. Other physio-medical schools have existed, at Cincinnati, from 1859 to 1885; at Marion, Indiana, from 1881 to 1890; at Indianapolis, since 1873; and at Chicago, since 1885.

The leading physio-medical periodical, the *Recorder*, was established in 1832 as an exponent of Thomsonism, and was one of the first journals devoted to that system. It was entitled the *Thomsonian Recorder* up to 1837, the *Botanico-medical Recorder* from that date until 1852, the *Physio-medical Recorder* after that until, consolidating with another journal, it appeared as the *Cincinnati Medical Gazette and Recorder* from 1880 to about 1885, when it became extinct. The successive changes in name correspond to changes in Thomsonian thought.

W. H. Cook, another leading exponent of the system, succeeded Curtis as editor of the journal in 1855. Besides this, the sect has had one or two journals which were short-lived, and the two existing periodicals, published at Indianapolis, Indiana, and Westerville, Ohio, since 1875 and 1891 respectively. Besides its journals, the literature of physio-medicalism consists mainly of the writings of Curtis and a few works by Cook and recent authors. Illiteracy, shallowness, and narrowness are a pervading feature of its periodical literature and modes of thought.

Physio-medicalism at the present time has its greatest strength in Ohio, Indiana, Illinois, and Iowa, with some following in the States adjoining them, and in Texas, Oregon, and Washington; between two-thousand and three-thousand practitioners are claimed for it in all, but this is probably an excessive estimate. There is a national association of its practitioners, organized in 1883, which has about 150 members; State organizations exist, in a condition of more or less vitality, in Indiana (organized in 1863—the oldest existing physio-medical society), Ohio, Illinois, Iowa, Michigan, and Washington.

The sect now has two journals and two colleges; the number of graduates from 1881 to 1890 averaged 21.6 annually, but since then the number appears to have diminished more than one-half.

The characteristic fundamental doctrines and claims of physio-medicalism are as follows:

Professing to reject speculation and human assertion and authority and to be free from human error, physio-medicalism claims to be based solely upon and guided solely by the "immutable" teachings and laws of nature, wherefore it considers itself infallible. This idea is represented in the name physio-medicalism, which is taken to mean "natural medicine," that is, medicine taught by and following Nature.

Disease is viewed as a disturbance of the normal action of the vital principle. All diseases are looked upon as essentially the same in their general nature—an inability of organs to perform their natural functions properly, owing to the derangement of the vital action. The vital power, or nature, is a potent curative agent, and powerfully resists disease and promotes recovery. Physio-medicalism (as the name partly signifies) professes that its fundamental therapeutic principles are to aid and follow Nature.

The pathologic notion upon which physio-medicalism lays the greatest stress is that fever, inflammation, irritation, etc., are not diseases or injurious to the organism, but that they are manifestations of vital efforts to cure disease, and should be aided, never opposed, by medication. The great error of regular medicine, from the physio-medical standpoint, is the idea that fever is destructive and injurious, not recuperative, and the antipyretic treatment based on that idea.

All drugs are considered to be divided into two distinct and sharply-defined classes—those that oppose and those that aid the vital force and vital processes. The former are the poisons, which destroy the tissues and, in sufficient quantities, life itself; they are always injurious, and should never be used in the treatment of disease; since they cause disease, it is absurd to suppose that they can ever cure it. The drugs of the second class are gentle, innocuous, and always beneficial, never injurious; their action is always to tend toward and vanish in health; they are the only true remedies for disease, and they alone should be used in treatment. These are called "sanative" medicines, a designation often applied as a name for the whole system. The injuriousness or harmlessness of a substance is an essential, unvarying characteristic; a poison, for instance, is always a poison, injurious under all circumstances and in every dose. Physio-medicalism expresses firm opposition to the use of powerful agencies like bleeding, mercury, opium, and similar active means.

Although only innocent medicines may be used,

there is no restriction to vegetable substances. While the physio-medical *materia medica* comprises many articles, the principal remedies are lobelia, capsicum, and the vapor-bath. "Courses" of medicine are also prescribed, by which, it is claimed, "any sensible man or woman" can cure nine-tenths of all diseases. Superior results are of course claimed by physio-medicalism from the treatment of disease on these principles.

The correspondence of these methods and doctrines with those of Thomsonism is marked. Physio-medicalism is a descendant, somewhat refined and modified, of Thomsonism, with some of its notions adapted or dropped, and a few principles that had only a minor place in the earlier system worked out to greater prominence. Physio-medicals, while considering that the Thomsonian system contained some crudities, errors, and even absurdities, of minor importance however, regard the system as of general excellence, and honor Thomson as the discoverer of (alleged) true and revolutionary medical principles.

In estimating the merits of physio-medicalism, a system originally derived from the teachings of Samuel Thomson, the latter's utter lack of education and experience and the commercial character of his operations should be borne in mind.

The claim of being so founded upon the teaching of nature as to be infallible and free from human error is idle. The same claim is put forth for all dogma, and the same object is aimed at by true science and philosophy as well. All the facts and laws of nature have to be laboriously searched out by human observation and interpreted by human intelligence; all investigations of truth are subject to the same fallible human element. It is therefore pure assumption for the physio-medicals to claim to know the operations of nature beyond the possibility of error or to have a method of pursuing knowledge superior to all others.

The position of physio-medicalism upon the pathology and treatment of fever, its chief point of antagonism with regular medicine, does not stand the test of facts as a universal truth. In some cases of fever and inflammation, it is true, diaphoretic and relaxing treatment is proper and effective. But it is equally true that in other cases vigorous antipyretic treatment by drugs, and especially by cold baths, is capable of producing marvellously beneficial results. This is so well established as to be beyond denial. The indiscriminate rejection of antipyretic treatment, according to the fixed blind dogma of the physio-medicals (however applicable it may be in a few cases), is manifestly wrong and contrary to the interests of the patient.

The doctrine that poisonous drugs are always injurious and curative drugs always innocuous cannot

be true. There are many drugs, like quinin, strychnin, arsenic, and alcohol, that are markedly curative and beneficial in proper doses, but are violent poisons in larger quantities. It is, in fact, their powerful properties that render such drugs effective and make many of them among the most valuable of remedial agents.

Aside from this principle as a theoretic abstraction, the practice of using gentle and agreeable medicines is highly commendable and important. Physio-medicalism has no monopoly of such treatment; the prevailing use of lobelia in its practice is, in fact, far from being of such safe and gentle character as is desirable.

There is great inconsistency between the teachings of physio-medicalism concerning poisons and its use of lobelia. The adherents of the system deny that lobelia is, under any circumstances, poisonous; they are indignant that the drug is asserted to be injurious and because dealers sell it labelled "poison"; and they laboriously attempt to explain away the damaging facts and fatal cases against it. They cite, as an argument for the harmlessness of lobelia, instances in which large doses have been taken without injurious results, which is equal to claiming that it is perfectly safe to fall from the top of a high building because cases have occurred in which persons have not been injured by such falls. All their claims cannot diminish the fact that lobelia is a harsh, depressing drug and a powerful poison. Numerous fatal cases of poisoning by it are on record; the Thomsonian medical systems are responsible for many deaths occasioned by its use, and botanic practitioners have been repeatedly tried and convicted for fatal results so caused.

The system is bred and sustained by extravagant enthusiasm and exaggeration of the importance of one or two minor ideas, with consequent disregard and rejection of other elements which are also included in the aggregate of truth; such factors flourish most in narrow and ignorant minds. The verdict of the world upon Thomsonism has been passed and the sentence of extinction has been executed. Its offspring, physio-medicalism, languishes, weak and obscure; and it is doomed eventually to be swept away as a stain that smirches a small corner of the edifice of truth.

THE SALOL-TEST FOR GASTRIC ATONY.

BY A. L. BENEDICT, A.M., M.D.,
LECTURER ON DIGESTIVE DISEASES, UNIVERSITY OF BUFFALO, DENTAL
DEPARTMENT.

THERE are a number of organic chemicals that are insoluble in an acid medium and that break up into two components in the presence of an alkali. Salol, a union of salicylic and carbolic acids, is the best known of these, and it has been employed to

mark the time of the passage of the stomach-contents into the intestine. A powder of salol is given at the end of a meal, the urine is saved at, say, fifteen-minute intervals and tested for salicylic acid by pouring a few drops of liquor ferri chloridi into the test-tube. The formation of ferric salicylate is indicated by a dark, permanganate color. A gram is usually given, but as a few deaths have occurred from this or a slightly larger dose, it is better to give half a gram. The test should be found in from forty-five to sixty minutes after the ingestion of salol.

It is plain that the salol-test cannot indicate the real emptying of the stomach, but only the preliminary leakage through the pylorus. Again, the time set as an average includes the decomposition of salol, the absorption of its components, their passage through the portal (or possibly the lymphatic), pulmonary, and systemic vessels to the kidneys, and their elimination and passage through the entire urinary tract. Judging by the potassium-iodid test for gastric absorption, about ten minutes must be subtracted for these various delays. It must also be considered that the change in reaction is not an instantaneous one. In animals the reaction of about the first eighteen inches of the intestines is acid. However, if it could be established that in spite of these *à priori* objections the normal time of the appearance of the salicylic test were considerably increased and diminished by atony and irritability, respectively, of the gastric muscles, the test would still be of practical value. Relying on the reputation of the advocates of the test, I have used it for some time, until the surprising monotony of the results led to neglect and finally to a more careful recording of notes to learn if my growing skepticism was justified. It is regretted that earlier and much more numerous memoranda were not saved. Still, they would only have added force to the present list.

In this series of nineteen observations the average time for the appearance of a marked reaction (without extracting with ether) was fifty-five minutes, the minimum thirty, and the maximum ninety. These extremes were reached in two persons each. All four were afflicted with sub-acid or non-acid dyspepsia, shown by chemic examination, except in one minimum case, a feeble old woman who had chronic bronchitis. Of course, the chemic examinations were not made after the same meal as the salol-test, so that absolute conclusions are out of the question. It is also probable that the maximum is in excess of the true time, for the seventy-five-minute urine was not saved, and in one case there was already a slight reaction at the end of one hour. With observations fifteen minutes apart, and the extreme limits only an hour apart, the word *average* loses much of its significance. It would be better to say that the three-quarter-hour and the one-hour samples were those in

which salicylic acid was usually found (fourteen times in nineteen examinations); that a slight or even a marked test might be found in the half-hour sample; and that the hour-and-a-quarter sample should always show the reaction.

A control-experiment made in a healthy man is of the highest interest. I argued that if the salol-test was of any value in showing the time of the emptying of the stomach, it would appear more quickly if given when the escape of chyme through the pylorus had already begun. Fifteen centigrams of salol were given an hour-and-a-half after a meal, and the urine saved every ten minutes. At twenty minutes there was the merest darkening of the urine on adding ferric chlorid. At thirty minutes there was a trace of salicylic acid; at forty minutes a good reaction. Thus, with the stomach presumably already emptying itself, the elimination occurred only fifteen minutes earlier than the average of the series, and not so early as in several instances when it was given immediately after the meal. The period of elimination in this case occupied about thirty-six hours.

The decomposition of salol was, by Ewald, attributed to the pancreatic secretion, but Gley, by removing the pancreas from two dogs, showed that the decomposition still occurred. Stein's experiments have shown that mucus accelerates the absorption of salol, and that it may be absorbed from the stomach. Case XII illustrates this point, for the patient swallowed considerable mucus if, indeed, there was not true gastric catarrh. Cornet states that an hour-and-a-half is required for the appearance of salicylic acid in the urine, which is certainly not true clinically. He also states that salicylic acid may be found in the stomach two or three hours after large doses of salol. His experiments, however, were made on healthy animals, and the present series of cases seems to indicate that in sub-acid dyspepsia salol is decomposed much more rapidly in the stomach, unless we assume that persons with secretory failure have an excess of muscular activity on the part of the stomach. Case III, with a moderate amount of hydrochloric acidity, had a very slow digestion, food remaining in the stomach six or seven hours after a medium-sized meal, but the salol-test occurred an hour after eating.

Cornet states that after fifty centigrams of salol, elimination requires at least twenty-four hours. Huber considers it a sign of atony if more than twenty-four hours is required. In Case VII, in which a faint reaction was seen in the one-hour sample, and good tests in these one-and-a-half and two hours after the meal, salicylic acid was absent in the three-hour sample. Unfortunately later tests were not made. Cases XII and XVI, in which, according to the ordinary test, gastric motility was good (salicylic acid being found half an hour after

the meal), showed the reverse condition according to Huber's method, since elimination required, respectively, thirty-six and forty-eight hours. Judging from the clinical appearances, Case XII was much the more atonic of the two; in fact Case XVI recovered very rapidly. It would seem that the duration of elimination would depend largely on circulatory, and especially upon renal conditions, so that Huber's test would not be decisive as to gastric atony.

It will be observed that while this series, in a general way, seems to show that achlorhydria may allow the quite rapid absorption of salol from the stomach, there are enough discrepancies to vitiate any possible value that the test might have in this direction. In fact, the conclusion seems justified that the appearance of salicylic acid after the administration of salol merely means that the latter has been absorbed somewhere, and that no practical deduction can be drawn, unless possibly from the occurrence of a very marked delay, but this delay does not often occur in the very cases in which we should most expect it.

CASES.

		Hours.	Hours.	Hours.
I.	<i>Hepatic cirrhosis, gastric catarrh</i>	½	¾	3
II.	Hepatic cirrhosis, stomach nearly normal	...	I	1½
III.	Incipient pulmonary tuberculosis(?), subacidity, fermentation acids, slow digestion	...	I	
IV.	Incipient pulmonary tuberculosis, subacidity, and atonicity	¾	I	1½
V.	Subacidity with eructations	...	I	3
VI.	Slight dilatation, eructations	¾	¾	
VII.	Subacidity* and atonicity (Jan. 13) No salicylic test 3 hrs. p.c. (Apr. 1)	...	1½	2
VIII.	Subacidity	¾	I	
IX.	Subacidity	¾	35 min	
X.	Subacidity*	¾	¾	2
XI.	Subacidity*	...	1½	3
XII.	Chronic bronchitis, gastric catarrh(?)	...	¾	1½
XIII.	Atonic dyspepsia (subacid)	...	I	1½
XIV.	Subacidity* (Oct. 30)	¾	¾	3
	Marked butyric acid (Oct. 31)	...	I	3
	Fermentation (Nov. 13)	...	¾	
XV.	Subacidity*	¾	¾	
XVI.	Subacidity*	...	¾	

NOTE.—Diagnoses in *italics* were verified by physical and chemic examination. Cases of subacidity, marked with a star, showed absolute lack of hydrochloric acid.

The first column, marked "hours," refers to the finding of slight traces of salicylic acid after extracting the urine with ether. The second column indicates the time at which a marked reaction was first found. The third column refers to the time at which the qualitative reaction appeared most marked in the urine saved at intervals up to three hours.

CLINICAL LECTURE.

TUMOR AT THE BASE OF THE BRAIN.¹

BY CHARLES CARY, M.D.,

OF BUFFALO, N. Y.;

PROFESSOR OF MATERIA MEDICA AND THERAPEUTICS, UNIVERSITY OF
BUFFALO.

THIS young woman presents a number of symptoms that will enable us to make an unerring diagnosis of a disease that, on account of its gravity, I am glad to say, is comparatively rare. She tells us that she was born in this country, is twenty-three years old, unmarried, and that her family has been exceptionally healthy. In childhood she had scarlet fever, diphtheria, and several of the milder infantile disorders that left her without sequelæ; her health since childhood until about a year ago was good. Last January or thereabouts she began to have headache, a trouble previously unknown to her, except occasionally as an accompaniment of menstruation. It persisted, became more grave until the slightest pressure on the head caused the greatest distress. You will notice from her expression that the finger barely touching her forehead induces a jar that is extremely painful. After the headache had lasted for two months or more it was aggravated by persistent vomiting. The vomiting was unaccompanied by nausea, was without abdominal pain, and no alterations in the diet relieved it. For over nine days she vomited almost incessantly. About this time, about the first of April, she became suddenly paralyzed, and for two days was unable to speak. We have not the benefit of the results of an examination at this time, and cannot determine the actual extent of the paralysis. Her statements seem to limit the paralysis to the face. When I ask her to go through the various facial movements, such as smiling, raising the eyebrows, attempting to whistle, you see that there is no apparent paralysis present. But the use of this pin-point shows that the sensibility of the left side of the face is decidedly impaired, and the finger can be brought in contact with the outer canthus of the left eye and with the conjunctiva without producing the marked reflex movements that it does on the right side. Even the left nostril seems to be less susceptible to sensory impulse when she inhales this strong vinegar or ether. Pursuing the investigation further, see how different is the appearance of the mucous membrane of the mouth on the two sides. Note the sponginess of the gum on the left side and the accumulation of food between the cheek and the teeth, of which she seems to be unaware. Compare with this the right side, where the mucous membrane is wholesome, paler, and much more cleanly. She tells us also that she does not chew with the left side of her jaw, and as I invite her to bite upon a lead-pencil, you can see that there is a partial paralysis of the muscles of mastication on the left side. There is loss of sensation as well as of taste upon the left side of the tongue, and paralysis of the left hypoglossal nerve, as shown by protrusion of the tongue to the left. As I look closely at her eye I see that there are one or two hairs and some particles of dust on the conjunctiva, to which she seems indifferent. The mucous membrane is engorged and in a state not unlike that of the mouth and

nose. This condition of the eye followed her sudden paralysis in April. When I ask her what the next occurrence was, she tells me that her eyes began to weaken and that vision failed, so that for four or five weeks she has been totally blind in both eyes. As you see, when I shade her eyes and then suddenly expose them to light, there is no pupillary reflex. There is a general paresis of the left eye, so that, asking her to follow the snapping of my finger with her eyes, the right eye moves much more freely than the left. Personally I have not examined the fundus of the eye, but a report from Dr. Lucien Howe states that she has extreme atrophy of both optic nerves, with retinitis in the left eye.

There is but one other point in the general appearance of the patient to which I wish to call your attention, and that is the facial expression, which, except for the manifestation of pain in the frontal corrugation, is one of apathy. Her attitude when not disturbed is one of sluggish indifference. At each of my visits, and I have now seen her a number of times, she has been listless, apathetic, sitting in one position for a long time unless invited to some occupation. Her statements have not been to the same effect at all times, and the discrepancy I ascribe not to any untruthfulness but to a failure of memory. As recorded in the hospital-book, she told us, at the time of her admission, of two distinct convulsions that occurred in April. To-day she has omitted to mention them.

I believe that we have here a case of intra-cranial tumor. From the involvement of so many nerves, it must be located at the base of the brain, where, from pressure on nervous tissue, from venous obstruction, and from consequent increase in the cerebro-spinal fluid, it has produced the various symptoms present. These symptoms are divisible into two groups, the focal, which enable us to locate the seat of disturbance, and those that are due to the change in intra-cranial pressure. Neither of these groups of symptoms will aid us directly in diagnosing the kind of tumor.

The most characteristic symptom of increased intra-cranial pressure, and, therefore, of brain-tumor in general, is the constant headache coming on in a person not subject to such trouble and without other assignable cause. Any jar of the head increases the pressure momentarily, and, as you have plainly seen, aggravates the pain. This same increase of pressure produces the mental dullness, which is a very fortunate circumstance, as the suffering and realization of the condition are thus materially lessened. The same increase in intra-cranial fluid has caused prolonged pressure on the optic nerve, with resulting atrophy, as indicated by the loss of vision. Even this candle, placed close to her face in different positions, induces no retinal impression. You will note that the loss of vision is not a focal symptom, as it is general and complete. A hemianopsia would point to pressure upon one optic nerve. The vomiting, of a projectile nature, we may also believe to be purely a pressure-symptom. The epileptiform convulsions—granting that she had them—must also have been pressure-symptoms.

The left retinitis and conjunctivitis are due, not to atrophy of the second nerve, but to that of the ophthalmic branch of the fifth, in which is located the trophic control of the eye.

¹ Clinical Lecture at Buffalo General Hospital.

The impaired sensibility of the face, tongue, and mouth, as well as the loss of taste, points to the involvement of the fifth nerve; the motor nerve of the face, the seventh, has been involved, according to the history, but at present the paresis is limited to the tongue, supplied by the hypoglossal, and to the muscles of mastication, supplied by the inferior maxillary division of the fifth. The impairment of the sense of smell is, I believe, explained by the trophic changes in the mucous membrane, due to the involvement of the trifacial nerve. The lesion must, therefore, be at the base of the brain, on the left side, but not extending far outward, as the seventh, eighth, ninth, tenth, and eleventh nerves escape. The tumor must lie in the posterior part of the middle fossa of the skull, extending, perhaps, into the anterior part of the posterior fossa. Its exact localization is only a matter of analytic interest, inasmuch as a basal tumor cannot be operated upon, and it is only in cases in which surgical relief is possible that the anatomic location is important.

Of the several kinds of tumor that may occur in the cranium, I believe that this is most probably a sarcoma, as such growths are more liable to be basal, or it may, perhaps, be tuberculous. It has undoubtedly originated in the fibrous tissue at the base of the brain.

In the hope that the tumor might be syphilitic the patient was placed upon specific treatment, but the heroic doses of potassium iodid that she has taken have failed to afford relief. This treatment has, however, had a diagnostic value. The principal treatment now is directed toward the relief of the more troublesome symptoms. The loss of sensitiveness in the left eye, which has already allowed foreign bodies to set up a conjunctivitis, may result in the formation of an actual ulcer. Washing with rose-water and boric acid will benefit this, and the application of a patch over the eye may be necessary if her indifference to injuries threatens its destruction. Her headache has been in a measure relieved, and I should advise the continuance of the treatment by the use of salines to deplete the system, and, so far as possible, to diminish the intra-cranial pressure. There has been no vomiting since she entered the hospital; and her headache, though persistent, has been so much milder that it has not caused intense suffering. We have a right to expect nothing more than to be able to keep her in a comfortable condition.

The end of the case may come through cerebral hemorrhage, which has already once occurred, to judge from the sudden paralysis, or an aggravation of the pressure from the simple growth of the tumor may induce a retarded pulse and respiration, followed by coma and death. If the nature of the tumor be tuberculous, meningitis may result and cause death, with the ordinary symptoms of that disease.

Fatal Poisoning by Quassia.—VENN (*University Medical Magazine*, vol. vii, No. 4, p. 304) has reported the case of a child fatally poisoned by a rectal injection of a decoction of two ounces of quassia in about a pint of water, made for the relief of seat-worms. From five to ten minutes after the injection the child became livid, vomiting took place, the muscles became relaxed, and respiration labored and shallow and the pulse imperceptible. Death took place within a few minutes.

CLINICAL MEMORANDA.

ON CERTAIN MORPHOLOGIC AND MICRO-CHEMIC PECULIARITIES OF THE BLOOD IN DIABETES AND GLYCOSURIA.¹

BY LUDWIG BREMER, M.D.,
OF ST. LOUIS, MO.

WHEN we look back on the development and progress of the medical sciences during the last forty or fifty years, and consider the amount of minute and exact information which during that time anatomic investigation has furnished about the tissues of the human body, it seems strange that we are still in the dark about the anatomy, both normal and pathologic, of that tissue upon which all the others depend, the blood. Hematology is the most neglected of all the branches of medicine. Possibly this neglect has been due to the trend of medicine during the past four or five decades, which eschewed humoral pathology and, so to say, looked with contempt upon the blood.

It is only of late, say in the last fifteen years, that the interest in this most important, because health- and life-sustaining, tissue has been revived. A powerful impetus in this direction was given by the discovery of the plasmodium malarie, which in its turn was the result of the bacteriologic tendencies of modern medicine. The methods invented for the study of bacteria were applied to that of the blood, but principally for the purpose of finding and demonstrating the pathogenic microbes coursing in the circulation. The changes that these microorganisms might produce on the cellular elements of the blood did not seem to enter into consideration on the part of the investigators.

With the discovery of the plasmodium malarie the attention of the pathologist was once more directed to the much-neglected and almost entirely-disregarded red blood-corpuscle, in which the parasite named is found in cases of malarial fever. Ehrlich's demonstration of the various granulations of the several kinds of white blood-cells was another stepping-stone on the road to substantial progress, at least so far as the histology of the blood in the normal state is concerned.

At the present time, it may be said, the most rudimentary methods of blood-investigation still prevail, and beyond the counting of the red and white blood-corpuscles, the determining of their relative numbers, the demonstration of the specific granulations, and of the amount of hemoglobin, very little is known. The changes in the red blood-corpuscles in anemia, poikilocytosis, and microcytosis are also very incompletely known, owing principally to the fact that our knowledge of the normal histology of the red blood-corpuscle, which in the course of this article I shall for brevity's sake call erythrocyte, is extremely defective.

For a number of years I have been engaged in the study of the corpuscular elements of the blood in health and disease; the results of these investigations, constituting, in my opinion an attempt, though possibly a feeble one, at a systematic pathologic anatomy of the blood, I shall publish at no distant day. One of the results of my work on this subject I shall now briefly describe. It is an observation which I have made on certain

¹ Read before the St. Louis Medical Society, January 19, 1895.

morphologic and microchemic properties of the blood in diabetes and glycosuria.

It is hardly necessary to state that any contribution to the knowledge of a disease like diabetes, which has been studied so much and explored so little, so far as tangible results are concerned, must be a welcome addition to the stock of our knowledge. It is also plain that even the smallest step in the direction of ascertaining the nature of so obscure a disease may become one of the stations which are constructed along the road leading to the goal of all medical study, the cure of the disease.

It is well known that the blood in the physiologic state contains a certain percentage of sugar, whose amount varies between 0.1 and 0.3 per cent., and that 0.15 is probably the average percentage in normal blood. Traces of it, as is also well known, occur in the urine of healthy persons, but are not demonstrable with the usual chemic tests, say, Fleming's and Nylander's. A positive result with these reagents excites at once suspicion of metabolic disturbance in the individual from whom the urine has been obtained. Now, the essence of my discovery lies in the fact that whenever sugar can be demonstrated by the usual methods, either by the ordinary chemic tests, or by the polariscope, or by fermentation, there is a distinct and characteristic color-reaction of the erythrocytes on the application of a microchemic test by a combination of certain anilin colors. The method which I have employed for this and other purposes is as follows:

Two aqueous solutions of eosin and methylene-blue are made, viz., from 24 to 28 drops of a 0.5 per cent. solution of eosin are added to 2 drams of a saturated solution of methylene-blue. With these proportions the neutral boundary is approximately obtained, where the reaction is neutral, neither acid (eosinophilous) nor alkaline (methylene-blue reaction). This neutral point is determined by dipping a small piece of white filtering paper into the solution. There is, when exact neutral reaction exists, scarcely any coloration of the paper slip, or at most a very faint grayish-blue tint. To one-half of this solution in a watch-glass a drop or a fraction of a drop of the 0.5 per cent. eosin-solution is added, just enough to show a decided preponderance of the eosin stain, recognizable by the red color of the paper slip; to the other half one or more drops of the saturated methylene-blue solution are added, enough to stain a paper slip distinctly blue. A drawback in the use of these solutions is the precipitation of crystals which form a scum on the surface of the solution. This scum is easily removed by slightly passing the smoothly cut edge of a piece of filtering paper over it. The crystals are thus moved to the periphery or cling to the filtering paper, and the surface of the solution becomes absolutely clear.

Cover-glass preparations of blood must be in readiness. These preparations are made after the Koch-Ehrlich method. A drop of blood is spread on a cover-glass in the usual manner, forming a very thin layer, so that the individual blood-corpuscles are separated from each other.¹ The cover-glass preparations are heated for about two hours at a temperature of from 120° to 125° C.,

preferably in a copper heating apparatus. After this the preparation is floated for about three minutes on the solution containing eosin in excess; next it is similarly treated with the solution having the excess of methylene-blue. Having been dried the preparation is imbedded in damar or balsam in the usual manner. Specimens thus treated show the following peculiarities in normal blood:

All the erythrocytes assume a reddish-brown (maroon) tint, which is more or less sharply divided from the colorless central area (depression).

The intensity of the stain varies in different specimens derived from different individuals, between a light reddish-brown and a deep chestnut-brown, almost a black-brown. Different states of the blood show different color-reactions of the erythrocytes. The variation in the same individual on different days is sometimes very striking. Still more striking is the difference in the color of the blood of different individuals.

The blood-platelets (Bizzozzo's corpuscles), too, are plainly stained by this method. In another publication (*Centralblatt für die medicinischen Wissenschaften*, 1894, No. 20), I have shown these, the so-called third corpuscular elements of the blood, to be nothing else than the products of physiologic decay of the erythrocytes. Often they can be seen in the act of expulsion from the erythrocyte, only parts of them protruding. Their color varies between a decided rich, deep blue and a violet. They are always more or less basophilous, showing affinity for the methylene-blue.

The nuclei of the leukocytes are stained pure blue; the intra-nuclear network shows often very plainly. All epsilon-granulations (Ehrlich's) present themselves in a violet stain. The granulations of the alpha-cells are of a bright-red color. Slightly basophilous (methylenophilous) are the nuclei of the medium-sized lymphocytes, the protoplasm of which is generally stained blue, and contains basophilous (blue) granulations. Finally, the smallest lymphocytes have intensely blue nuclei and only a slightly blue protoplasmic margin.

The great advantage of this method consists in this, that the blood-plasma, too, assumes distinct and definite hues, according to its chemic constitution. Generally its reaction is slightly neutrophilous; often, however, it is of a deep reddish-brown stain, due, no doubt, to the exudation of the hemoglobin from the erythrocytes. This exudation or effusion is the result of the drying and shrinking of the protoplasm of the red blood-corpuscle or diskoplasma.

Among the many changes alluded to, about the nature of which I am still in the dark, that observed in diabetes is most characteristic and striking. It consists in the complete loss of the eosinophilia of the erythrocytes. This loss is demonstrable in the blood of all persons in whose urine sugar can be shown to occur by the ordinary clinical tests.

In all instances that have come under my observation so far, comprising cases of typical diabetes, as well as glycosuria of a more or less transitory character, the staining peculiarity just mentioned could be shown to exist. So exact and certain is this reaction that on various occasions, in fact, in a majority of the cases examined, I was enabled to predict sugar in the urine, even in persons in whom not the slightest suspicion of glycosuria existed.

¹ A far superior method of spreading blood for the purposes of histologic and pathologic study I shall publish shortly in another place.

In such preparations the erythrocytes either remain entirely unstained, or they are of a slightly yellow or greenish-yellow tinge. Rarely there is a narrow peripheral zone of the erythrocyte stained red (eosinophilous). The plasma, too, remains colorless, or is at most slightly rose-colored, a proof that it is not the loss by effusion of the hemoglobin that causes the lack of coloration of the erythrocytes, but that a chemic change has taken place in the diskoplasm.

Together with this anomaly of color-reaction in the erythrocytes there are certain changes in the granulations of the lymphocytes and in the products of disintegration of the erythrocytes, *i. e.*, the blood-platelets. A description of these changes (in the platelets) I shall reserve for another publication.

Again, in all of the cases of diabetes and glycosuria examined by me up to the present time another peculiarity is demonstrable quite characteristic (at any rate so far as the quantity is concerned) of diabetic and glycosuric blood. It consists in a superabundance of white and generally globular bodies of varying sizes. They seem to be of the same chemic nature and morphologic appearance as the minute unstainable granules that are found in the blood of healthy individuals, and which by some have been called elementary granules. None of the known coloring agents will stain them. As to their nature and origin, they are necrotic substances derived from decaying erythrocytes (their products of decay being the platelets), leukocytes, and lymphocytes. The amount and the individual size of the granules are so large in some specimens of diabetic blood that the plasma appears more or less coarsely granulated. They are plainly enough demonstrable by the staining method described, but the pictures obtained by the Gram method are much more striking. In some cases these necrotic masses seem to preponderate over the plasma, a fact that possibly explains, or, at all events, renders intelligible the nervous and general symptoms of diabetes and glycosuria. Another peculiarity quite characteristic of the kind of blood in question is a very clear, sharply-defined, narrow, white zone surrounding the nuclei of the white-blood corpuscle (leukocytes and lymphocytes and alpha-cells). They often describe all sorts of curves around the nuclei; a frequently recurring curve is the C form. I take these white contours to be indications of limited necrosis of the protoplasm of respective cells. Only in two out of fifteen cases were these peculiarities not demonstrable.

Whether this abundance of necrotic globules is in connection with the color-reaction described, or whether there exists another characteristic constituent of the sugar-blood causing the reaction, has to be determined by future experiments. Against the former assumption speaks the fact that the blood in certain cases of nervous cachexia is loaded with white globular masses of apparently the same nature with those just treated of, and yet the tincture of the erythrocytes is the normal one.

It is somewhat strange that the erythrocytes of sugar-blood are refractory in their elective affinity only to eosin, whilst other acid anilin dyes (scarlet, aurantia, and acid fuchsin) stain them easily.

One might be led to assume that the abnormal amount of sugar in the blood is responsible for the loss of the eosinophilous reaction of the erythrocytes. But a simple

experiment refutes such an assumption. If a cover-glass preparation of normal (non-diabetic or non-glycosuric) blood be treated with a solution of grape-sugar, the color-reaction is the normal one. If, however, a cover-glass preparation smeared with non-diabetic or non-glycosuric blood, heated in the usual way, be floated for a short time, say twenty-five or thirty minutes on diabetic or glycosuric urine, and then be stained by the eosin-methylene method, the typical reaction sets in; the erythrocytes lose their eosinophilia. They appear slightly greenish-yellow. The counter-experiment, treatment with non-diabetic urine, is negative. Neither does urine, to which grape-sugar has been added, change the normal stain. I have not succeeded as yet in diagnosing the greater or lesser amount of sugar in the urine from the various degrees of loss of eosinophilia in the erythrocytes. Nor is it possible to diagnose simple or transitory glycosuria from genuine diabetes by this staining method. There seems to be, however, no doubt that the loss of the eosinophilia bears a certain proportion to the percentage of the sugar. Likewise, the white granular masses are generally proportionate, both in size and amount, to the gravity of the case. They are likely to remain in cases of glycosuria, when sugar is no longer demonstrable in the urine. Such cases are, in my opinion, in danger of relapse. Finally, there are cases in which the reaction is somewhat dubious, and in which only a suspicion is raised by the appearance of the blood, *i. e.*, the stain is nearly, but not quite, the typical sugar-stain.

In glycosuria artificially produced by phloroglucin, for instance, with a daily dose of 0.6 administered during three consecutive days, the mentioned reaction of the erythrocytes could likewise be demonstrated. The presence in abundance of the white granular masses could be established.

Gabriczewski¹ has claimed that glycogen can be demonstrated in the leukocytes of diabetics. I have not been able to verify this observation.

The material of my investigations is confined at present to fifteen cases. Of these, six are genuine cases of diabetes; six are patients in whom nervous troubles, generally of a neurasthenic character, exist (one of them traumatic neurasthenia); two present nervous symptoms dependent on luetic infection; one has struma, but presents no subjective symptoms. In the great majority of these cases the presence of sugar in the urine was foretold by the behavior of the erythrocytes toward the eosin methylene-blue staining method, and the presence of the white granular masses as shown by the Gram method.

HEMORRHAGE FROM THE UMBILICAL CORD ON THE TENTH DAY.

BY A. RHETT STUART, A.M., M.D.,
OF WASHINGTON, D. C.

IN THE MEDICAL NEWS of November 17, 1894, was an article on "Umbilical Hemorrhage, not Due to Loose Ligature or from Laceration of the Cord, but Due to a Hemorrhagic Diathesis, Weakened and Diseased Vessel-walls, or an Inherited Taint of the Blood." That such cases are of rare occurrence I cannot agree. I am of the opinion

¹ Arch. f. exp. Path., Bd. 23, p. 272.

that they occur frequently, but that they are often not recorded, but regarded by the attending physician as nothing very rare or remarkable. The only thing that attracts his notice, to his sorrow and disappointment, is that, notwithstanding all devices and ways and means of treatment, both surgical and medical, he fails to control the hemorrhage, and death is the inevitable result. I consider that this hemorrhage from the cord, which is always so fatal, occurs usually only in those infants that are born of scrofulous or syphilitic parents, and in whom the tainted, impure blood is inherited; the diseased and weakened vessel-walls also are inherited; in truth, all the organs of the body do not escape the impurity.

A short time ago I was called to see a patient, a baby ten days old, apparently in good condition. On inquiring what was the matter the mother informed me that the baby's cord had been bleeding for two hours, and on lifting the outside dress I found that quite a hemorrhage had taken place, the undergarments being saturated with blood. The mother told me that the cord had fallen off five or six days before, and everything was progressing nicely until she noticed the blood, which had soaked through the clothes. I at once quickly exposed the cord to view, and noticed the blood oozing and welling up drop by drop and trickling down over the belly from the apparently non-ulcerated but healthy-looking stump of the desiccated cord. It reminded me of the water bubbling through the sand at the bottom of a spring, only the oozing and welling up from the stump of the cord were very deliberate and slow.

The infant was placed on a pillow upon a table, and Monsel's solution applied in and around the stump with apparent success, for after using it the blood ceased flowing, and after waiting fifteen minutes and seeing no signs of continued hemorrhage, I placed over the stump a large compress of absorbent cotton and a closely-applied bandage, and left.

In three hours' time I was summoned again to find a renewal of the bleeding, which must have started a few moments after I left the house, for the compress and bandage were both completely and thoroughly saturated with blood, although a large amount of cotton was used as a compress. I exposed the stump again after administering three drops of brandy in a teaspoonful of water, and found the blood oozing slowly up, drop by drop, as before. I sent out for a stick of silver nitrate, which I applied sedulously, but only with the effect of stopping the oozing for a few moments.

Tannic acid, powdered, with powdered iron subsulphate, was next used, making an inky-black paste with the liquid blood, on account of their incompatibility; but by pasting the stump up in this manner the blood ceased to flow for one hour, and I was about to leave, when on close examination one little drop of blood was seen to well up afresh. I then sent out for a solution of plaster-of-Paris, which Vogel speaks of as having been used with success, but I could not get it, either because it was so early in the morning the druggists did not wish to be disturbed, or because there was none in stock.

Having then determined to ligate the stump immediately, I sterilized two large sewing or knitting needles about three inches long, and transfixed the stump close

to the abdominal wall, the needles being at right angles, and by pulling it up ligated tightly the stump both below and above the transfixing needles, in two places, with two separate pieces of thread.

After taking the needles out I applied the medicinal treatment that had acted best before, that is, the powdered mixture of tannic acid and iron subsulphate, making a mound of this mixture around the stump, using it freely and abundantly. Having waited a little while, and again seeing no evidence of continued hemorrhage, I placed on a compress and bandage, and left the house for a little rest and sleep, feeling more confident and hopeful of my treatment being successful, and thinking that by no possible means could any more blood escape. I told the parents that if they noticed any blood on the bandage to send for me, and that as a last resort I would cut down and find the bleeding points and apply ligatures directly to them; and if that failed, I could do nothing more. Not being sent for, I called the next morning at 11.30 o'clock, but little hopeful of successful news, and therefore was not surprised to find that the baby had died at 7 A.M., though no blood had appeared on the outside of the bandage. Wishing to see if there had been much hemorrhage following the strong double ligatures of the stump, I exposed it and found that there had been considerable oozing on all the compresses except the top layer. I would say here that the compress was not so thick or abundant as before, for I considered that the baby had but little more blood to lose without death as a result, and I wished the slightest oozing to be seen by spaking through the slight amount of cotton. The infant, of course, died from asthenia from the loss of blood from a hemorrhage that I could not control.

I doubt if cutting down surgically and finding and ligating the bleeding-points would have succeeded, for the little ones will bleed to death from the freshly-made incisions, and the vessels are not to be found to ligate, the blood oozing in every direction from the smallest capillaries between the layers of the skin and from the tissues. These children some would certainly claim to be, of course, born of hemophilic parents. But I repeat that these hemorrhages from the cord are very liable to occur in infants born of scrofulous or syphilitic parents, and resist just as obstinately the attempts to control and the ways and means of treatment, both surgical and medical, as a child born of hemophilic parents, thus inheriting a hemorrhagic diathesis.

A remarkable feature of this case was the location of the collateral hemorrhage, in the eyes, from the conjunctival mucous membrane, when the bleeding seemed to be controlled for a time at the umbilicus.

The mother of this child was markedly scrofulous, and no doubt syphilitic. Indeed, five days after the baby's death I was called to see the mother, who lay in collapse with bloodless white tongue and mucous membranes, caused by the loss of blood from a profuse hemorrhage of the uterus on the fifteenth day after labor. This hemorrhage was controlled with difficulty by 20-minim doses of an active preparation of ergot by the mouth every two hours for twenty-four hours and thereafter for a few days, gradually reducing the amount of dosage until 3 minims every two hours were given during the day for several days. The uterus was immediately packed, as

well as the vagina, with iodoform-gauze in the usual manner, the packing remaining in place twenty-four hours, and on removal, after a cleansing antiseptic douche of the uterus and vagina, the yellowish lochial discharge made its appearance naturally and without odor.

The woman was brought out of the collapsed state she was found in by persistent stimulation from the beginning, using heat externally, and whisky, digitalis, and strychnin internally—coffee and liquids being used in large amounts on regaining consciousness, to increase the volume of the blood in the almost emptied vessels.

7 DUPONT CIRCLE.

A CASE OF ECLAMPSIA, WITH THE EXHIBITION OF VERATRUM VIRIDE.

BY A. M. DAVIS, M.D.,
OF GERMANTOWN, PA.

L. M., twenty-five years of age, a primipara, with a negative family history, had previously always enjoyed good health. When first seen the patient gave a history of having been pregnant six-and-one-half months. Physical examination revealed an individual of good physique, but poorly nourished, the mucous membrane of the lips and conjunctivæ being markedly anemic and the general complexion sallow. The heart-sounds were apparently normal, the first sound being perhaps slightly accentuated. The abdominal parietes were moderately distended, palpation revealing an L. O. A. position, with the fetal heart-sounds heard distinctly below and to the left of the umbilicus. The lower extremities were moderately edematous, this symptom having appeared for the first time one month previously. Examination of the urine showed it to be acid in reaction, with a specific gravity of 1010, and to contain about 30 per cent. of albumin by bulk, with a few hyaline and pale granular casts, the quantity secreted in twenty-four hours being slightly below normal. About this time colliquative diarrhea developed, which failed to respond to ordinary remedies.

The patient was made to rest in bed during part of the day, being restricted to a skim-milk diet and given the solution of iron and ammonium acetate (Basham's mixture), which had the effect of increasing the quantity of urine to three quarts or more during twenty-four hours. Urinalysis revealed a relatively less quantity of albumin. Notwithstanding this apparent improvement in the urinary symptoms the edema extended over the entire surface of the body (the stethoscope when used to auscultate the precordia leaving a pressure ring), and black spots before the eyes, with failing vision, began to appear, so that one week after the physician's attention had been first directed to the case the induction of premature labor was gravely considered. At this time, without apparent cause, signs of beginning labor began to manifest themselves, and twenty-four hours later delivery took place, labor being entirely normal, and the product of conception, apparently healthy, weighing 3½ pounds.

Within thirty-six hours after the birth of the child, lactation was established, the anasarca, diarrhea, and amblyopia, however, still continuing. The quantity of urine excreted varied from three to four quarts during the twenty-four hours, and the secretion still contained 30 per cent. albumin by bulk, and was of low specific

gravity. The pulse became rather rapid and of high tension, although not full and bounding. The pupils were somewhat dilated and responded feebly to light. Forty-eight hours after delivery the patient, without warning, was seized with a convulsion, beginning in the muscles of the face and involving those of the trunk and upper extremities, accompanied by complete unconsciousness. The attack lasted about three minutes, at the end of which time consciousness was partly recovered, the patient being in a semi-stuporous condition and unable, to a certain extent, to control the movements of the facial muscles. During the attack, inhalations of chloroform were promptly administered (which lessened the intensity of the spasm), and an enema of croton-oil (three minims) in glycerin was given, and proved effective. This was followed by one of chloral hydrate and potassium bromid, the latter enema being repeated in three hours. Diaphoresis was freely produced by alcoholic vapor obtained by wrapping saturated cloths about hot bricks.

Two other convulsive seizures followed at intervals of about an hour (both typically like those of eclampsia) the last occurring with greater severity and extending over a longer period of time than the two previous ones. The patient recovered consciousness slowly, the temperature registering 102° F., the pulse being 136 per minute, and of high tension but of moderate volume. The heart-sounds were distinct and forcible, the muscular element of the first sound being accentuated. The pupils were widely dilated, and the skin was warm and moist. Two hours after the cessation of the eclamptic attacks, as the character of the heart-sounds, the frequency of the pulse, and the increased blood-pressure had not changed perceptibly, five minims of the fluid extract of veratrum viride were given hypodermically under antiseptic precautions. As no apparent effect was produced by this administration, in one-half hour another injection containing the same quantity of the drug was given, which had the effect of reducing the pulse-rate from 136 to 108 beats per minute, and of causing a decided diminution in the degree of arterial tension.

Three hours after the occurrence of the final convulsive seizure the patient began to exhibit marked restlessness, which was controlled perfectly by morphin sulphate (gr. ¼) and atropin sulphate (gr. 1/100), the patient falling into a quiet sleep. On account of the existence of chronic nephritis, morphin was not used primarily, nor persisted in.

In twenty-four hours from the onset of the attack the temperature had fallen to normal and the pulse-rate numbered 86 beats per minute, the bounding quality of the pulse having largely disappeared; vision was apparently normal, and the patient's mental condition much improved.

The urine excreted during the twenty-four hours following the attack measured two quarts, containing fully 30 per cent. of albumin by bulk, with hyaline and pale granular casts. The patient was restricted to a skim-milk diet and urged to drink large quantities of mineral water. Medicinally diuretics were administered, and bags containing heated salt were placed under the loins to stimulate the kidneys to increased secretion. In three days following the attack, the edema had entirely disappeared; the quantity of urine excreted

measured three pints in twenty-four hours, the secretion still containing, however, about the same proportion of albumin, with the presence of casts. The milk-secretion (which was well established within thirty-six hours following delivery) rapidly lessened after the convulsions, and had almost entirely disappeared one week later. Improvement in the general symptoms was uninterrupted, the patient recovering sufficiently to leave her room five weeks after delivery. At this time the quantity of urine voided daily varied from two to three pints, and analysis revealed as follows: sediment abundant and flocculent, reaction acid, specific gravity 1013; mucus, a moderate amount; albumin, 20 per cent. by bulk; urea, a trace (0.77 per cent.). Microscopically, renal epithelium with a few pale and dark granular casts were seen.

The child, whose nails had not nearly reached the finger-tips, and on whose body lanugo was scarcely perceptible at birth, took nourishment from the bottle well, and is apparently healthy.

THE VALUE OF THE ANTITOXIN-TREATMENT ILLUSTRATED BY TWO CASES OF DIPHTHERIA.

BY L. WOLFF, M.D.,

CLINICAL PROFESSOR OF MEDICINE, WOMAN'S MEDICAL COLLEGE OF
PENNSYLVANIA; PHYSICIAN TO THE GERMAN HOSPITAL,
PHILADELPHIA, ETC.

ON January 12, 1895, I was called to see two of the children of A. S. They were respectively a boy of seven years and a girl of two years and eight months. They had both been previously in good health, although I had treated the boy for scarlatina some years ago. On examination I found the boy had tonsillar diphtheria, and in the girl the diphtheric deposits could be seen on both tonsils, the arches of the fauces, and the uvula.

With an improvised sterilized mop I detached some of the deposit from each of the two and inoculated two culture-tubes that had been prepared at the Bacteriological Laboratory of the German Hospital. Microscopic examination, in twenty-four hours, of the stained culture showed Klebs-Loeffler bacilli in great profusion.

The boy, who was able to do so, was ordered to gargle with a diluted solution of liquor sodæ chloratæ 1:60, alternately with a spray of hydrogen dioxid, every hour, together with calomel internally, 3 centigrams, every three hours. Milk and whisky were also ordered.

The girl, who could not gargle, was treated locally with the hydrogen dioxid spray alone and centigram-doses of calomel. Through the courtesy of the German Hospital authorities I was able to procure one bottle of Behring's antitoxin No. 1, which had been personally brought to this country by Mr. Charles Meyer, Imperial German Consul in this city. This was injected in one dose into the little girl, and the calomel-treatment was stopped. The same day laryngeal stenosis developed in her case, and with the aid of my friend Dr. Rosenthal intubation was performed. The visible deposits in the throat seemed to have diminished the following day, and had entirely disappeared three days subsequently. The tube was removed after forty-eight hours, and the little child made an uninterrupted recovery.

The boy's case seemed to have progressed favorably for

the first two or three days, when reinfection occurred, and spreading of the deposit all over the arches and uvula was noticed. Not being able to obtain any more antitoxin at the time, the original treatment in his case was adhered to, stimulants were vigorously pushed and strychnin was added, but in spite of our efforts the child died from general toxemia on the tenth day.

I publish these cases as an illustration of the value of the antitoxin. The younger child was the more seriously affected from the start, and recovered. It might readily be inferred that the older and stronger of the two, with a milder infection, would have survived could the antitoxin have been used in his case also.¹

MEDICAL PROGRESS.

Diphtheric Vulvitis in a Child.—GNICHTEL (*Journal of Cutaneous and Genito-urinary Diseases*, No. 147, p. 532) has reported the case of a girl, one year old, who for five days had been irritable and restless and appeared to suffer pain referred to the genital region, the symptoms being aggravated during micturition. Examination disclosed several patches of false membrane covering anteriorly the internal portion of both labia majora and nymphæ and invading the urethral orifice. The membrane was firmly attached and grayish-white in color. It was further learned that two fatal cases of diphtheria had recently occurred in the house in which the child resided, the last but a week before she was taken ill. There were no other symptoms. Bacteriologic examination of the membrane revealed the presence of diphtheria-bacilli. The patches disappeared upon the use of local applications, chiefly of hydrogen dioxid and mercuric chlorid, and the child made a good recovery. At no time were marked constitutional symptoms observed.

Nephrectomy for the Relief of Congenital Hydronephrosis in an Infant Two Years Old.—At a recent meeting of the Société de Chirurgie MARTIN (*Revue de Chirurgie*, 1894, No. 12, p. 1074) reported the case of a child, two years old, presenting a cystic tumor occupying almost the entire abdominal cavity, and having progressively developed from the time of birth. Puncture gave exit to twenty ounces of fluid having the odor of urine, and was followed by paroxysms of intense abdominal pain attended with vomiting. Subsequently, lumbar nephrectomy was successfully performed. Examination showed that the morbid condition was due to congenital narrowing of the ureteral orifice.

Pseudo hypertrophic Paralysis in an Old Person.—DESTARAC (*La Médecine Moderne*, 1894, No. 89, p. 1387) has reported a case of pseudo-hypertrophic paralysis in a man, sixty-eight years old, without hereditary predisposition. The mode of onset, the course of the disease, and the absence of reaction of degeneration excluded the possibility of error. Without creating a senile type of the disease in contra-distinction to the congenital type, it is pointed out that pseudo-hypertrophic paralysis may occur at all ages and in its various forms in the same family.

¹ No post-diphtheric paralysis has shown itself in the girl at the date of writing.

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SATURDAY, FEBRUARY 9, 1895.

SECRET MEDICINES AND THE TEMPERANCE-REFORM LEAGUE.

EDWARD EVERETT HALE in a magazine article thus writes of "Secret Medicines:"

"The audacity with which the so-called cures of intemperance are advertised is attracting general attention, as well it may. The matter is too important for good-natured neglect. Careful analyses have been made of medicines used in some of the much-advertised institutions, with very damaging results.

"There must be no secrets where life is concerned. The medical profession is a liberal profession, and not a trade, because it has always adopted this principle. What is paid to a physician is his *honorarium*. It is paid to him in recognition of his services to mankind, not simply as a purchase of his advice in the case in hand. Because this is so—because, indeed, life is something which cannot be balanced against dollars and cents—no physician who cares for his reputation keeps secret a method which he believes is useful to mankind. He makes it public, as PAUL made public the gospel when he landed on the coast of Europe. All medical associations of any character recognize this fundamental

necessity. And the moment when any physician refuses to be bound by such a rule, that moment, of his own accord, he cuts himself off from a liberal profession and makes himself what is properly called a quack."

He then quotes MISS WILLARD on the gold-cures and on that meaner class of hypocrites who gain credit among reputable physicians by falsely pretending that they have a "Sanitarium for Nervous Diseases," or institutes in which "no secret remedies are used." A fraud of this species was discovered by the Temperance-Reform League in Boston lately, who evades making public his gospel, and who stands high among the Prohibitionists. Says MISS WILLARD:

"White Ribboners do not believe that he has this right, or that the men who establish 'cures' throughout the country, and coin money out of them, have the moral right to do so. We believe that the English view is the true one: that any physician who has made a discovery, or who claims to have made one, which will alleviate the suffering of humanity, wrongs his fellowman and his profession if he does not make that discovery public."

"The following passages," continues DR. HALE, "are from an interview with GEORGE F. ORMSBY, published in the Boston *Herald*: 'Physicians whose eminence in their profession is generally conceded by the people of this country have disagreed with the venders of secret medicines for inebriates. Material medicines have only to do with material bodies; inasmuch as the weak will, the bent of mind, is something peculiar to the soul—something which the soul carries with it after the body becomes dust, the doings of the quack are as idle as to hope to bring salvation to a ghost by injecting hypodermic syringes into its grave. Purgatory is not thus to be escaped. Where a depravity of taste is produced and maintained by alcoholic disturbances of bodily functions, there drugs are efficacious. But drugs cannot cure a man of his memory. And his memory reminds him that rum once tasted very good. When his physical health has become perfect, when the ravages of brandy have been wholly repaired, only his memory, his habits, and his disposition to pleasure—spiritual things all of them—are his foes. How can these spiritual enemies be annihilated except through spirit conquerors!'"

MR. ORMSBY, who is attorney for the Temperance-Reform League, urgently invites any and every

physician who is not using a secret remedy, and who knows of any formula that will antidote the drink-crave proper, to publish it in THE MEDICAL NEWS.

The Temperance-Reform League is an organization for the reformation of drunkards and those addicted to drug-habits, and to prevent drunkenness and intemperance by all proper, honorable, and non-secret methods. The league has employed expert chemists to analyze the secret so-called cures, and finds that many of the "cures" or "tonics" of the alcoholic habit "contain from 7 to 35 per cent. of alcohol," and that 20 samples of the "opium-cures" contain morphine. MR. ORMSBY'S address is 113 Devonshire Street, Boston.

MYASTHENIA GRAVIS PSEUDO-PARALYTICA.

UNDER the designation *myasthenia gravis pseudo-paralytica* JOLLY (*Berliner klinische Wochenschrift*, 1895, No. 1, p. 1) describes a peculiar condition in which fatigue of the voluntary muscles is readily induced by exercise. He reports at length one typical case and cites another previously reported, both occurring in boys about fifteen years old. A search through the literature has resulted in the discovery of but fifteen other cases that belong to the same clinical category, one of JOLLY'S and ten of these terminating fatally. In some of the remainder recovery or distinct improvement ensued, while in others the outcome was not known.

In the first cases reported the symptoms were believed to be of bulbar origin, and the same conception of the pathology was adopted by subsequent observers. At most of the autopsies, however, no morbid changes in the nervous system were found, and the involvement in some cases of the extremities, as well as of the muscles supplied by the bulbar nerves, tended to show that the lesion was not always restricted to the higher nervous centers. In one case in particular degenerative changes were found throughout the entire length of the cerebro-spinal nervous system, from the ocular nuclei to the sacral cord. It might be conceived that various degrees of alteration took place in different cases, from the slightest to the most profound; but there seems reason to believe that the cases thus grouped together are really of several different kinds. One is thus forced to the conclusion that while in some structural changes are present, there are others in which such changes are not demonstrable.

As intimated, the characteristic phenomenon is

undue readiness of fatigue of voluntary muscles after ordinary functional activity. The function of the affected muscles is not lost, but movements at first well performed are gradually effected with greater and greater difficulty, until finally they become impossible. The disturbance is less pronounced after rest, and particularly in the morning after sleep.

The motor derangement is not restricted to any group of muscles, but often involves those supplied by the bulbar nerves, and in some instances also those of the extremities. Nutritive changes do not occur. Spinal curvature may result from involvement of the vertebral muscles. Intermissions, sometimes attended with improvement, may occur in the course of the disease, but death is likely to ensue from the dangers attendant upon the dysphagia and the interference with respiration.

The reflexes, as well as sensibility, are preserved. The muscles respond normally to faradic currents of ordinary intensity, but to tetanizing currents they behave as they do to volitional impulses—that is, the tonic contraction, at first readily induced, grows gradually feebler and feebler until it finally ceases altogether. Degenerative reactions do not appear. For this peculiar electric reaction the designation myasthenic has been proposed. It corresponds in some respects with the reaction of exhaustion.

In diagnosis the differentiation from pseudo-hypertrophic paralysis and progressive muscular atrophy may be necessary; but, as already stated, there is neither enlargement nor wasting. The condition appears to be the antithesis of THOMSEN'S disease, or congenital myotonia, in which there is difficulty in movement after a period of rest, gradually subsiding with the persistence of the volitional impulse. In both conditions it is by some believed that there is an abnormal state of the muscles dependent upon changes in the ordinary metabolism. It has also been shown that similar muscular conditions can be developed temporarily by the administration of certain drugs. Thus veratrin, physostigmin, and digitoxin are capable of inducing the muscular phenomena of myotonia and protoveratrin (a body allied to veratrin) those of myasthenia.

Therapeutically the most important indication is rest, and both exercise and electric stimulation are to be sedulously avoided. Particular attention is to be directed to the general nutrition, which should be maintained at the highest level possible.

EDITORIAL COMMENTS.

The Suppression of the Nostrum Traffic.—In contrast with the efforts on the part of some members of the American Medical Association, as representative of the medical profession, to exorcise certain salutary restrictions from the Code of Ethics are the numerous indications of a disposition on the part of the dental profession to elevate its standard both ethically and educationally. While certain men in the medical profession look upon nostrums with indifference, if not with encouragement, the dentists are discussing measures for the suppression of unethical practices of all kinds.

In a paper read some time ago before the First District Dental Society of the State of New York, Dr. E. C. Kirk, of Philadelphia, showed that a large number of nostrums recommended for the relief of various painful affections of the teeth and gums contained cocaine, despite the emphatic assertion to the contrary in most instances. The danger of the indiscriminate use of such preparations in unskilled hands is entirely too obvious to require extended comment, and calls for restrictive legislation of some sort. The *Dental Cosmos* in its February number notes editorially that a movement has been set on foot in Mississippi having for its object the prohibition by legislative enactment of the use of nostrums in connection with the extraction or filling of teeth. The agitation is a timely one, and should find the most cordial indorsement and support wherever intelligence and honesty prevail over ignorance and quackery. The restrictions in the use of dangerous remedies or such as are not what they are pretended to be, should, however, not be limited to any one class or variety, but should be extended to include all preparations the nature of whose composition is concealed. Dentists and physicians might well join hands in support of such salutary legislation and institute measures looking to its enactment and enforcement.

Loeffler's Toluol Solution.—Numerous inquiries have been directed both to Dr. E. J. Kuh and to *THE NEWS* concerning the constitution of the solution of toluol referred to in the article that appeared in *THE NEWS* of January 26, 1895, p. 100. It was really an omission that the formula was not given at the time, and we are glad to take this opportunity to make the deficiency good.

The solution is made by taking of menthol 10 grams (3jss), and adding sufficient toluol to make 36 c.c. (f3x), and finally adding 60 c.c. (f3ij) of alcohol and 4 c.c. (f3j) of solution of ferric chlorid. The affected parts are first cleansed with a cotton swab held in the grasp of forceps, and then the application is made thoroughly by means of a fresh swab saturated with the solution. Precautions are to be taken by means of a face shield or other protection against infection from coughing, which is likely to occur as a result of the application. This should be practised at intervals of not less than four hours.

As Loeffler points out, this mode of treatment in nowise antagonizes or is counter-indicated by the employment of injections of the antitoxin. It has the further advantage of being serviceable in doubtful or suspicious cases

and in the treatment of the various non-diphtheric anginas.

The prescription is spoken of in terms of warmest praise by those who have used it, and is deserving of further trial. One enthusiast is quoted as saying that he would prefer the combination to the antitoxin.

Angio-paralytic, or "Pulsating," Neurasthenia is the designation given by DANA (*Journal of the American Medical Association*, vol. xxiv, No. 4, p. 110) to a condition observed in neurasthenic patients, characterized by a sense of beating, of which they never lose consciousness. The tension of the pulse is low and the rhythm normal or but slightly accelerated. Palpitation is, as a rule, not present. There may or may not be tremor, but dermatographism and epigastric pulsation are commonly present. Pressure on the carotid stops the beating. There are usually insomnia, nervousness, and mental depression. The condition has been observed in young men and in adults under forty. The abuse of tobacco and alcohol is sometimes an exciting cause. There is believed to be an abnormal relaxation of the arterioles and capillaries, so that the blood is thrown into vessels that have lost their resiliency and the pulse-waves are not fused together. The condition appears to correspond closely with that described by S. SOLIS-COHEN (*American Journal of the Medical Sciences*, February, 1894, p. 130) as vasomotor ataxia, of which it may be considered a sub-variety. In the milder and less typical forms cure is effected by the use of general and vasomotor tonics. In the more advanced cases ligation of an artery has yielded the best results. A prescription containing ferric chlorid, gr. ʒ, potassium bromid, gr. x, hydrobromic acid, ʒ, and spartein sulphate, gr. iij, affords relief in many cases. Monobromated camphor and strychnin are often useful. Hydrotherapy is also to be recommended.

The Philadelphia Polyclinic is to be complimented both upon its improved appearance and upon the improved character of its general "make-up." Its editorial direction has fallen into strong and trustworthy hands, and the publication promises to exercise an important and salutary influence on ethical medicine and ethical journalism. The *Polyclinic* has further ranged itself with *THE NEWS* among the few weekly medical journals that acknowledge the pecuniary value of the literary work of medical men by making payment in cash or reprints for contributions.

SELECTION.

THE PRESIDENT OF HARVARD COLLEGE ON FOOT-BALL.

THE evils of the intercollegiate sports, as described in the president's report of last year, continue without redress or diminution. In particular, the game of football grows worse and worse as regards foul and violent play and the number and gravity of the injuries the players suffer. It has become perfectly clear that the game as now played is unfit for college use. The rules of the game are at present such as to cause inevitably a large number of broken bones, sprains, and wrenches, even during trial or practice games played legitimately;

and they also permit those who play with reckless violence or with shrewd violations of the rules to gain thereby great advantages. What is called the development of the game has steadily increased its risks, until they have become unjustifiable. Naturally the public is losing faith in the sincerity of the professed desire of coaches, captains, and promoters to reform it.

It should be distinctly understood, however, that the players themselves have little real responsibility for the evils of the game. They are swayed by a tyrannical public opinion—partly ignorant and partly barbarous—to the formation of which graduates and undergraduates, fathers, mothers, and sisters, leaders of society, and the veriest gamblers and rowdies all contribute. This state of mind of the spectators at a hard-fought foot-ball match at Springfield, New York, or Philadelphia cannot but suggest the query how far these assemblages differ at heart from the throngs which enjoy the prize-fight, cock-fight, or bull-fight, or which in other centuries delighted in the sports of the Roman arena. Several fatal accidents have happened this year to schoolboys and college students on the foot-ball field; and in every strenuous game now played, whether for practice or in an inter-collegiate or other competition, there is the ever-present liability to death on the field.

It is often said that by employing more men to watch the players, with authority to punish instantly infractions of the rules, foul and vicious playing could be stopped. The sufficient answer to this suggestion is that a game which needs to be so watched is not fit for genuine sportsmen. Moreover, experience indicates that it would be hard to find trustworthy watchers. Extravagant expenditure for the teams throughout the season, and by the spectators at the principal games, continues to disgust the advocates of simple and rational manly sports.

Meanwhile it is to be observed that there is much wholesome physical exercise taken and much genuine athletic sport enjoyed in the university, in ways wholly independent of these exaggerated intercollegiate games. The variety of the exercises and sports is always increasing. For two years past the class exercises on the floor of the gymnasium have been very useful; and during the current year military drill has been introduced.

The athletic sports and exercises which commend themselves to sensible teachers and parents are those which can be used moderately and steadily, and which remain available in some measure in mature life. Such are gymnasium exercises, walking, running, rowing, sailing, riding, cycling, tennis, gunning, bowling, and fencing. The youthful expert in any of these sports and exercises will carry into his strenuous professional life a great source of enjoyment and a real safeguard of health and of the invaluable capacity to endure without injury mental and moral stress. On the other hand, the games which demand so much practice and such severe training that the brain is temporarily dulled for all other use, or which require a combination of many individuals of like powers and tastes, or which contain as essential elements violent personal encounters, can have no direct application in the after-life of professional or business men. Moreover, all games which require intense training for short periods present a serious physical and moral danger for the players, the familiar danger of reaction when training stops. In education, therefore, it is the

moderate and long-available exercises and sports which alone have real interest and value. The intense, highly competitive sports afford some stimulus for other and better things, but this stimulus is now too dearly bought.—*From Annual Report of President Eliot.*

CORRESPONDENCE.

ENTERIC FEVER IN PREGNANCY.

To the Editor of THE MEDICAL NEWS,

SIR: I have just read in your issue of the 26th inst. the interesting "Case of Enteric Fever Occurring in Advanced Pregnancy," by Dr. Stryker, and am reminded of the record¹ I made on the same subject thirty-six years ago.

At that long-ago date, in writing up the history of one-hundred-and-thirty consecutive cases of enteric or typhoid fever, derived from private practice, I said:

"Pregnancy and lactation I have not found to have any material influence upon the character of the disease. In fourteen cases of intermediate gravity, pregnancy existed in five, the advance of which was two months in two, three months in one, four-and-a-half months in one, and six months in the remaining one. None of these miscarried.

"Among the cases of malignant type, pregnancy existed in one at an advance of two months. Miscarriage occurred on the tenth day of the disease, and was not followed by any serious result. The patient began to improve by the twenty-first day.

"Of those who gave suck, two were of the mild and one of the malignant type. In neither of the former was the child denied the breast. In the latter case, during the second week of the fever, the secretion of milk was entirely suspended; the child was removed to a neighboring family and not permitted its mother's breast for the next two months, when an abundant secretion again took place."

Concerning the use of *veratrum viride*, the same record goes on to say: "Besides its signal property as an arterial sedative, it is capable of producing other excellent effects, to some of which attention has not been much directed. I allude more particularly to its diaphoretic tendency, and that it possesses this to a marked degree, and experience with the remedy during the past two-and-a-half years in the management of this and other acute diseases enables me to speak of its action with no little degree of confidence. In all proper cases of enteric fever, according to my own experience, it is a safe, reliable, and valuable adjuvant to other means employed for its successful management. I have administered it to the young and to the aged, to the delicate and robust, in the pregnant state at all its periods, and have not had cause to regret its effect. The accusation that it is an abortifacient, and therefore its employment is unsafe in general practice, is, I am persuaded, wholly without just foundation. So far indeed from possessing a tendency to produce abortion, further experience may possibly establish that, in certain conditions, this medicine may be beneficially employed for the purpose of defending the pregnant state. If my own experience

¹ Treatise on Enteric Fever. J. B. Lippincott & Co., 1859.

does not directly contribute to establish this fact, it at least assists in proving the remedy free from the charge preferred against it. The following case is given in point:

"Mrs. ———, thirty-six years of age, of very weak habit, the mother of seven children, aborted once at four months, sickened with enteric fever, January 1, 1858, pregnant at an advance of four-and-a-half months. During the first week the pulse ranged between 110 and 115 per minute, and by the twelfth day it was running at 130. Along with this state of the pulse there was restlessness, the skin hot and dry, pain in the small of the back and abdomen, with a slight show of blood from the vagina. Being warranted from previous experience to regard the *veratrum viride* as of service, I determined to bring my patient under its full influence. I began with Norwood's tincture, at the dose of five drops, and increased the quantity by two drops at each successive dose, every three hours, until the dose of eleven drops was reached, after which the pulse came down to 84, and the patient's condition was much improved, being free from pain, reduction of fever, and the whole surface covered with a gentle perspiration. To maintain this control of the symptoms, the dose of five drops was administered every four hours. Under the influence of this diminished dose the pulse ranged pretty steadily between 80 and 90 for the next several days. . . . The patient convalesced, went on to full term, and was delivered of a healthy child."

Away back in the forties and fifties the most successful plan of treatment of enteric fever consisted of diaphoretics, arterial sedatives, tepid and cold spongings of the general surface, to control excessive temperature. Now and then a heroic doctor could be found who resorted to cold wet-sheet-packs; the question as to the degree of fever being wholly decided by the feel of the patient's skin and condition of the pulse; for then the refinement of the clinical thermometer was not a vest-pocket ornament with country doctors. The sense of touch, cultivated to the most delicate impressions, was the guide, and the so-called "antipyretics" and "heart-failure" cut no figure in clinical reports. But now, in this year of our Lord, who can tell the number of patients that have been jeopardized by the readings of the clinical thermometer and the dread of innocent 103.5°!

Sincerely yours,

JAMES E. REEVES.

CHATTANOOGA, TENN.

THE NECESSITY FOR A NATIONAL DEPARTMENT OF HEALTH.

To the Editor of THE MEDICAL NEWS,

SIR: It is earnestly hoped that legislation for the establishing of a National Department of Health, or a National Health Bureau of some kind, will not be jeopardized or entirely defeated in the present Congress by differences among medical men as to the proper scope and character of the proposed law. The details of the scheme are of minor importance, and it would be well for medical men to waive somewhat in their preferences and endeavor to unite upon that which seems most feasible rather than divide upon different measures, and, from want of unanimity, secure nothing.

The importance of this measure can hardly be over-estimated; nothing is of more importance than the health of the people, and there is every reason why there should be in the General Government a department or bureau charged with the duty of investigating the causes of disease, especially of epidemics, the collecting of statistics of diseases, health and mortality, and reporting upon all facts bearing upon the sanitary conditions of the people.

No one who has had occasion to examine the statistical reports of the health-boards in different cities and States of the Union need be told how imperfect, confusing, and unsatisfactory they are.

One of the first good results of the proposed department would be something like order and reliability in the reports from different parts of the country in the matter of disease and mortality, instead of the present incomplete conglomeration.

The President of the United States has, in his late message to Congress, recommended the inauguration of a National Board of Health, or similar national instrumentality, and a bill to that end is now before Congress. The scope of this bill is none too broad, nor its powers too great, for the work of collecting and collaborating reliable data as to the sanitary conditions in all parts of the country and presenting them in intelligible form as a basis for the action of local health authorities or of Congress.

Out of such a department we might expect to grow an institute similar to that founded at Berlin, under a special act of the German Government, for experimental investigations in the line of bacteriology.

A large part of the work of the antitoxin-treatment of diphtheria has been done in that institute or in connection with it. New discoveries in this direction are certain to be made, and we should have a national laboratory for such investigations.

The session of the present Congress ends in about four weeks from now, and if no action be taken before March 1st the question will go over to another Congress, and nothing may be done for two years or more.

Those who have this matter in charge should rouse themselves and push it at once and vigorously in some shape. If we cannot get the ideal measure, let us have what we can get.

LEONARD LANDES.

NEW YORK.

INFORMATION DESIRED AS TO THE EFFECT ON THE PROSTATE OF UNILATERAL CASTRATION.

To the Editor of THE MEDICAL NEWS,

SIR: I would like to ask through your columns for information from surgeons in this country as to the effect of unilateral castration upon the total bulk of the prostate.

The existing evidence is scanty, but seems to point clearly to one-sided atrophy of the prostate as a common result of the removal of one testicle. Some experiments that I am now making on dogs corroborate this view, as does the observed condition of the prostate in monorchids. If it is found that the diminution in size extends to the other lobe, or if the shrinking of one lobe will in any large proportion of cases remove or lessen the me-

chanical obstruction to urination, it is obvious that the good effects of a simple and safe operation might at once be extended to a much larger number of patients and at an earlier and more favorable stage of the disease.

I now have several cases under observation, and hope by further experiment to throw more light on the subject; but conclusive clinical evidence must already be in existence, and I write in the hope that it will be sought for by those surgeons who have removed one testicle for disease or injury and whose patients are accessible for examination. I am, sir,

Yours, etc.,

J. WILLIAM WHITE.

1810 S. RITTENHOUSE SQUARE, PHILADELPHIA.

MORPHINISM IN CHILDREN.

To the Editor of THE MEDICAL NEWS,

SIR: I am desirous of adding to the clinical literature of morphinism in children. If any reader of your journal has met with a case and will furnish me details, I shall appreciate the favor and give full credit.

Respectfully,

J. B. MATTISON.

BROOKLYN, N. Y.

NEWS ITEMS.

Professor Ed. Kütz, a well-known physiologist, died on January 13th, at Marburg, of appendicitis.

The Society for the Relief of Widows and Orphans of Medical Men of New Jersey was incorporated in 1882, and has continued to grow both in influence and membership. Since its organization 241 physicians of the State have become members, of which number 22 have died, 28 have been dropped for various reasons, leaving at the present time 191 active members. The Permanent Fund amounts to \$1338.42, and it is intended eventually to allow small annuities to widows and minor children in cases of need. The amount already paid to the families of deceased members amounts to \$2478. The total cost of conducting the society during the past year was \$19.67.

BOOKS AND PAMPHLETS RECEIVED.

Some Statistics of Diabetes Mellitus. By N. S. Davis, Jr., A.M., M.D. Pamphlet. Decatur, 1894.

The Proceedings of the Fourth Annual Meeting of the Association of Military Surgeons of the United States. Held at Washington, D. C., May 1, 2, and 3, 1894. St. Louis: Buxton & Skinner Stationery Co., 1894.

A Retaining Splint for Excisions of the Hip-Joint, with a Case. By Stewart LeRoy McCurdy, M.D. Reprinted from the Pittsburg Medical Review.

Old and Neglected Deformities following Infantile Spinal Paralysis. By Stewart LeRoy McCurdy, M.D. Reprinted from the Columbus Medical Journal, 1894.

New York Letters on Orthopedic Surgery. By Stewart LeRoy McCurdy, M.D. Reprinted from the Columbus Medical Journal, 1894.

The Use of Traction in the Treatment of Joint-Diseases. By Stewart LeRoy McCurdy, M.D. Reprinted from the Pittsburg Medical Review, 1894.

Some Cases of Pneumonia. By James Herbert McKee, M.D. Reprinted from the Archives of Pediatrics, 1894.

Prophylaxis in the Treatment of Tuberculosis. By Lawrence

Flick, M.D. Reprinted from the University Medical Magazine, 1894.

Valedictory Address to the Graduating Classes in Medicine, Dentistry, and Veterinary Medicine of the University of Pennsylvania. By Louis A. Duhring, M.D. Delivered June 7, 1894. Philadelphia: J. B. Lippincott Company, 1894.

Erosions and Lacerations of the Cervix Uteri. By George H. Simmons, M.D. Reprinted from the Journal of the American Medical Association, 1894.

U. S. Department of Agriculture. Report of the Chief of the Division of Microscopy for 1893. By Thomas Taylor M.D. From the Report of the Secretary of Agriculture for 1893. Washington: Government Printing Office, 1894.

Four Cases of Chronic Pulmonary Involvement, with Features of Special Interest. By E. R. Axtell, M.D. Reprinted from the New York Medical Journal, 1894.

The Johns Hopkins Hospital Reports, Vol. IV, No. 6. Report in Surgery, 11. The Results of Operations for the Cure of Cancer of the Breast Performed at the Johns Hopkins Hospital from June, 1889, to January, 1894. By William S. Halsted, M.D. Baltimore: The Johns Hopkins Press, 1894.

Laparotomy Consecutive to an Operation for Suppurative Appendicitis. By Dr. Olaf Page. Reprinted from the Revista Medica, 1894.

Essentials of Chemistry and Toxicology, for the Use of Students in Medicine. By R. A. Withaus, A.M., M.D. Twelfth edition. New York: William Wood & Co., 1894.

New Instruments. By Seth Scott Bishop, M.D. Reprinted from the Journal of the American Medical Association, 1894.

A Synopsis of the Practice of Medicine. By William Blair Stewart, A.M., M.D. New York: E. B. Treat, 1894.

A Dictionary of Medicine, including General Pathology, General Therapeutics, Hygiene, and the Diseases of Women and Children. By Various Writers. Edited by Richard Quain, Bart., M.D. Lond., LL.D. Ed., F.R.S. Assisted by Frederick Thomas Roberts, M.D. Lond., B.Sc., and J. Mitchell Bruce, M.A. Abdn., M.D. Lond. With an American Appendix, by Samuel Treat Armstrong, M.D., Ph.D. New edition, revised throughout and enlarged. In two volumes. New York: D. Appleton & Co., 1894.

A Case of Chronic Peritonitis, with Intestinal and Abdominal Fistula—Enterorrhaphy—Recovery. By Frederick Holme Wiggin, M.D. Reprinted from the Medical Record, 1894.

American Association to Promote the Teaching of Speech to the Deaf. Fourth Summer Meeting, Chautauqua, N. Y., July, 1894. Abnormalities of the Upper Respiratory Tract and Ear. Found Commonly Among Deaf-Mutes. By Arthur Ames Bliss, A.M., M.D. Pamphlet. Rochester: Western New York Institution for Deaf-Mutes, 1894.

A Review of the Relations Between the State and the Medical Profession in New York. By Frank Whitehill Hinkel, A.M., M.D. Reprinted from the Buffalo Medical and Surgical Journal, 1894.

Travaux d'Électrothérapie Gynécologique. Archives Semestrielles d'Électrothérapie Gynécologique Fondées et Publiées, par le Dr. G. Apostoli. Paris: Société d'Édition Scientifiques, 1894.

Bureau of Education, Circular of Information No. 2, 1893. Contributions to American Educational History. Edited by Herbert B. Adams. No. 14. The History of Education in Connecticut. By Bernard C. Steiner, A.M. Washington: Government Printing Office, 1893.

Bureau of Education, Circular of Information No. 3, 1893. Contributions to American Educational History. Edited by Herbert B. Adams. No. 15. The History of Education in Delaware. By Lyman P. Powell, A.B. Washington: Government Printing Office, 1893.

Bureau of Education, Circular of Information No. 5, 1893. Contributions to American Educational History. Edited by Herbert B. Adams. No. 16. Higher Education in Tennessee. By Lucius Salisbury Merriam, Ph.D. Washington: Government Printing Office, 1893.

Should Cases of Tubercular Consumption be Reported to the Local Boards of Health? By J. F. Jenkins, M.D. Reprinted from the Journal of the American Medical Association, 1894.